

COAL AGE

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What Is Coal?

INTERESTING as will be the symposium of the American Institute of Mining and Metallurgical Engineers on the nature of coal, it will not be as valuable as one that will show what can be made from that mineral. The treatment of coal by solvents and by distillation may not show what is in coal but what may be derived from it, but it must never be forgotten that this is what we want to know and consequently let us not withhold our congratulations from those who are making such inquiries. They are doing a work nearer to our needs and one that is the more likely to serve us. Yet, light into coal's past history and present condition may serve to inform us as to the manner in which that which is, may be changed into something which we desire or may be able to utilize. Such a complex hydrocarbon seems too valuable to be cast rudely into the fire. There may be recoverable byproducts of a higher value than can be obtained by partial or complete distillation; who knows? We may yet find that the chemist, the microscopist and the xylotomist on the coal mining staff and important members of it at that. Again, who knows? Stranger changes have before now come to pass.

First Explosion of the Season

FROM the little town of Providence, Ky., comes news of the first mine explosion of the present winter season. It is too early to say whether it was due to gas, but it probably was not. Doubtless it was a coal dust explosion and with the present situation which finds us with many mines not rock dusted we can look for more such regrettable occurrences. The fact should spur us to immediate action.

Much is it to be regretted that the proposed new law for West Virginia as written makes rock dusting only an alternative of sprinkling, instead of an absolute requirement. We are sorry that this is the ultimate outcome of long conferences with operators held by the chief mine inspector throughout the state. Rock dusting is both safer and cheaper than effectual sprinkling. It is a relatively permanent cure. A mine made less dangerous, we hesitate to say safe, by sprinkling today may be unsafe tomorrow. One rock dusted thoroughly today will be safe for some months. There is a certainty about rock dust that gives the operating officials a confidence they could not have when relying on water.

A certain mine had a good sprinkling system, at least the officials believed it good, and it probably was as good as any. The lines leading to the mine froze and five days later or thereabouts, a disastrous explosion occurred.

Even where a dust has been tested and it has not exploded in the test, there is no assurance of safety. The conditions may not have been as favorable as they may be at some time in the mine. In fact it is not always easy to "plant" an explosion, as those who in

the early days of testing the most dangerous dusts can tell you. A cloud of dust must be raised of sufficient intensity around the igniting flame or the explosion will fail. Looking back, however, there are few mining areas that have not had explosions, and practical men will view that fact as more convincing though distressing, evidence of inherent danger than the failure of one or more attempts at creating an explosion by artificial means.

Intensive Study

EVIDENCE of the intensive study given to coal transportation underground is afforded by the article in this issue on mine track standardization. How unhealthily slow has been our progress from the old wood track, spiked to ties and so warped by the rain that it would draw the spikes by which it was feebly held in place, to the truly modern mine track with every feature designed to prevent derailment. If we wish to run a railroad underground we shall have to adopt railroad standards of operation—accurate and careful design, patient upkeep and proper signaling devices. Our railroads used to have repeated wrecks which we were at a loss to explain. Now the track is good and the cars are well designed, and accidents are less frequent. We need at the mine to make an extensive study of track and mine-car standards and transportation methods. Why not have a mine traffic manager? A big company might find it would pay. A wreck is a costly matter in lives, locomotives, cars, track, displaced trolley wire and the lost time of day hands from the face to the tippie. Surely the correction of such losses is worth while. Has anyone gone so far as to estimate the cost of such accidents to the mine which sustains them, as some do many times in the working day? All this is wholly apart from the matter of saving cost by being able to use standard replacement material.

Those Dangerous Model Mines

WE ARE learning why model mines are dangerous. It is because no one opens a mine of that class unless he has a large area of thick coal. Large unbroken areas mean firedamp and danger, and in thick coal the roof and floor are not disturbed and in consequence no rock dust is formed. The drilling of the roof and floor distributes rock dust, and the shooting of one or both of them makes still more.

When the floor is shot, and that is the more frequent practice as thereby drainage is aided and labor and explosive are saved, the clay under the coal is exposed, crumbles, rolls down from the sides and is crushed under the car wheels and by the traffic, effectually rock dusting the floor. The roof also when broken crepitates, and small particles of rock fall on the ribs and fill the air. The large rock is gobbled or hauled to the surface, and the fine is left to dust the roadways.

Almost never does one hear of a coal-dust explosion in a thin seam. The areas where the coal is thin are areas where the risk is least. One mining company with thin coal found that it had only three places that did not have the required percentage of rock dust. It is going to apply dust to its headings, however, to make their safety the more certain and it would be well to rock dust all mines, seeing that rock dusting is not really expensive, especially where infrequent dusting will suffice. The dust will protect the coal and roof, will lighten the roadways and give an assurance of safety that will make the operator view his mine without apprehension.

Just Where We Were

THE decision of the Interstate Commerce Commission reaffirming its earlier opinion in the assigned car case leaves the situation just where it was before a rehearing was granted. Nobody in authority has changed his views. Those Commissioners who disagreed with the majority conclusions in 1923 are still dissenters. The text of the new report contributes nothing to the literature on the problem: it is cumulative rather than constructive. Repetitious fact piled upon repetitious fact make a voluminous, but not necessarily impressive, record—especially when the divergence of opinion is not so much upon the facts themselves as upon the question of what policy of conduct they justify. The only concrete result of the reopening of the case has been to delay for 18 months or more the beginning of the test of the Commission's power and the soundness of its judgment.

That such a test will be made appears almost certain because of the effect that the decision as it now stands will have upon the private car owner. While the tendency in late years has been to restrict some of the advantages accruing to non-railroad owners of instrumentalities of transportation, it remained for this decision to take away the right of exclusive use of private cars by their owners. Having invested millions in such vehicles, it is not probable that the owner will be content to sink to the status of an emergency equipment reservoir for the railroads at a non-compensatory rate of return.

Outside of the private owner and the direct beneficiaries of such ownership, public opinion—and possibly the courts—will support the majority view of the Commission requiring private cars to be thrown into the common pot when distribution on an allotment basis is necessary. That devotion to the cause of *pro bono publico*, however, will not prevent more larger producers and consumers from joining the ranks of the private car owners if the Supreme Court of the United States should overrule the Interstate Commerce Commission.

The fact that the Commission couples up its fiat against the assigned car with the reservation of its right to issue orders for emergency distribution of equipment robs the prohibition of much of its punch. Canny railroad purchasing agents can still whisper persuasively to weak operators and extol the virtues of price concessions in exchange for steady running time—protected by priority orders should the need arise. Until the Commission's policy with respect to such orders has become less of an unknown quantity, there are many producers who will be ready to accept the conditional promise for the flat guaranty possible under the old assigned car rules. On the other hand, many

other operators will take the present decision as a pronouncement of intent and seek to make railroad-fuel contracts reasonably profitable in and of themselves. In doing that, however, they must remember that their insistence upon the abolition of the assigned car lays upon them an obligation to make available an adequate supply of railroad fuel.

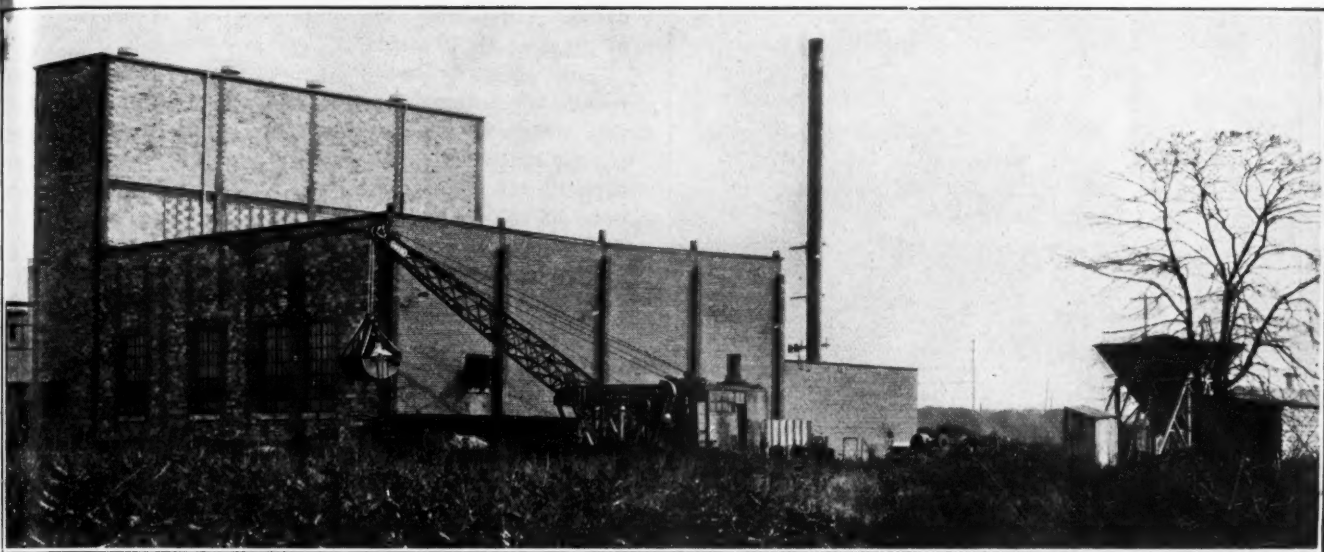
Snap Judgment

TO THE AVERAGE citizen, "coal" is what he finds in his cellar and burns in his furnace. He does not ask if there is any cleaner coal or if it meets with the specifications which have been established by certain of the anthracite producers. He has the body of offense, the *corpus delicti*, in his cellar and in his furnace, and he argues about it. He knows no other.

Consequently when we complain about an unjust public let us remember this: The industry is blamed not for all but for certain coal. To avoid offense all the coal on the market must be good. For this reason *Coal Age* has urged public inspection, the purchase of culm banks by companies of repute where they are not in the hands already of reputable parties and the sale of such banks to persons only who have proved their good intentions and then not without a binding contract that the culm will be honestly prepared to comply with reasonable specifications.

It is unnecessary to point out that there are more persons purchasing domestic coal than there are buying industrial coal. Consequently the domestic consumer practically decides what shall be done to the coal industry. His wishes and votes rule. It is highly important that those especially whose opinions count shall be made favorable to the coal industry. In large cities like New York, Philadelphia, Washington and Boston are published papers which have an unusual power to mold public opinion. Consequently, as these cities burn anthracite, the quality of that coal is of great importance to the whole coal industry. If it is not well prepared the whole coal trade and producing interest suffers. This position of trust should be recognized. We urge therefore that not only should sub-specification anthracite be kept out of the market by the means described but that specifications, prepared when cleaning methods were less adequate, be made more stringent and that all the anthracite companies adhere to them rigidly.

Few people know or care what these specifications are; everyone, however, wants clean coal, and the best way to create a favorable public opinion is by giving the public everywhere coal of a high standard. A little bone in coal is permissible, and we should hesitate to advise that coal values be wasted, but even the bone coal should be utilized mostly, if not entirely, at the mine plant. Slate, however, is inadmissible except in negligible quantity. A proper spirit of craftsmanship and engineering talent, a wise appreciation of politic behavior would convince every anthracite operator that he should deliver to the market, coal as clean as he can make it without sacrifice of heat values. The first article in this issue is the record of the operations of a company that is trying out the receptivity of the public to a coal of high heat value and minimum ash. Two coals of low ash percentage are mixed and the ash separated in oil. The result is a product of unusual cleanliness.



Toledo plant, Ohio Trent Coal, Coke & Amalgam Co.

Toledo Plant Makes Trent Amalgam Better Known

Starts Bulk Production of This Oil-Coal Fuel—To Sell It in Paper-Wrapped Bricks and Loose—New Burner May Consume It as Powdered Coal—Four Trent Licensees Are Now Manufacturing It

BY E. W. DAVIDSON
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"TRENT amalgam" may be a little-known term in the coal industry today despite the fact that Walter E. Trent, of Washington, D. C., developed a process making amalgam a full seven years ago. In the minds of most coal men this term merely suggests "some sort of a mixture of washed pulverized coal with oil to make fuel," but of its method of manufacture they know little. If the recent spread of the Trent amalgam idea throughout the country continues they will soon know a great deal about it.

One spot from which this knowledge is radiating is the new plant of the Ohio Trent Coal, Coke & Amalgam Co. in Toledo, Ohio, which is just getting into its stride as a producer of amalgam. Four other plants in this country are now manufacturing under the Trent patents and three more are in prospect. Another is operating in France and one is planned for Brazil.

25-LB. BLOCKS FOR HOUSEHOLD USE

The Toledo plant which began turning out its product in April, 1924, had produced about 35,000 tons of it by Dec. 1, mostly in the form of bulk amalgam for domestic and small steam heating plants and was proceeding with a definite plan to briquet the material in 25-lb. blocks, each wrapped in oil-and-moisture-proof paper and offer it to the public as the ultimate household fuel. At that time this company was developing a burner by which raw amalgam can be fired as powdered coal in locomotives and small steam plants.

Engineers also were studying the possibilities of combining the Trent process with low-temperature distillation for plants now attempting to meet the surplus screenings problem of coal producers. Thus the field for Trent amalgam is expanding.

The company at Toledo, which was organized in 1922, but which began building its plant on a 22-acre waterfront tract only a little over a year ago controls the manufacturing rights for Ohio under Trent patents.

TAKES ADVANTAGE OF LOW PRICES

It uses Pocahontas, Pittsburgh No. 8 and Hocking slack in definite proportions to produce the coal content of amalgam. The fuel oil used ranges from 14 to about 22 Baumé and is readily obtainable from any one of the several refineries nearby. The practice has been to shift from one oil to another to take advantage of price.

In the 600-tons a day Toledo plant the full Trent process is applied, but with standard instead of special equipment. The coal is dumped from railroad cars into a hopper from which an apron conveyor delivers it into the building to a crusher reducing it so that it will all pass through $\frac{1}{4}$ -in. perforations. An elevator hoists it to two overhead bins—one for low-volatile Pocahontas and the other for high-volatile Hocking and Pittsburgh No. 8 coals.

These coals are mixed ordinarily in the proportions of 60 per cent high volatile and 40 per cent Pocahontas, although these proportions can be varied at will to produce amalgam for different purposes. The coking quality of the smokeless coal serves as a binder for the amalgam in burning. Of course, if it is desired, the amalgam can be made using either type of coal alone. Pocahontas amalgam, for instance, would approach smokeless if properly handled in a fire.

From the two overhead bins the coals are carried through a riffle-type mixer and rotary-plate feeders. At that point the flow splits into parallel lines each receiving identical treatment. The coal, mixed with



Exterior of Toledo Plant Which Has Produced 35,000 Tons of Amalgam

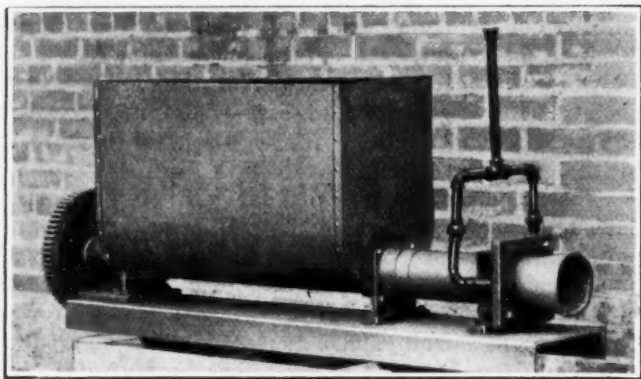
This factory was erected by the Ohio Trent Coal, Coke & Amalgam Co. a year ago and began turning out amalgam in bulk last April. It is one of five Trent plants now operating in the United States. Several more are in prospect.

60 per cent water, goes through ball mills which reduce it to a minimum fineness of 40-mesh. Naturally a large proportion of it is 100-mesh and finer.

From the ball mills the mixture of finely divided coal and water flows through a launder into the center well of a Dorr classifier. Coal coarser than 100-mesh sinks and is drawn back by a rake to be fed again through the ball mill. Back water in small volume is introduced by an overhead spray into this oversize coal during the raking process.

In the operation of the classifier, the coal 100-mesh and finer overflows the rim of the broad classifier pan. It then runs to an amalgamator. Fifteen per cent of oil by weight is fed into the flow of coal and water as it enters the first of the four cells in the amalgamator. Each cell contains a propeller-type agitator revolving at about 150 r.p.m. on a shaft running through the battery. The flow of coal from cell to cell is alternately over and under baffles, during which it receives a tremendous agitation.

The amalgamation of the carbon and volatiles with the oil takes place during this stage of the process. The violent agitation causes the coal substance to agglomerate with the oil into a plastic mass in which the coal and oil ingredients are united intimately, and the ash which has been separated from the coal by the fine grinding floats free in the water. The coal-and-oil mixture tends to ball up into small nodules called caviar, because they resemble in form and color the black eggs



First of the New Amalgam Burners

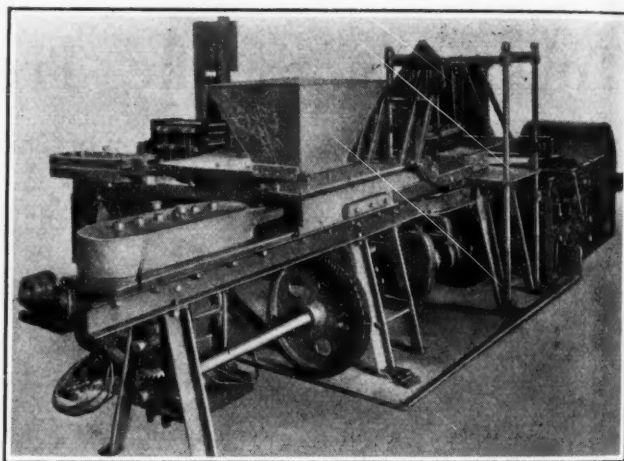
This compact unit, shorn of its drive and air connection, carries a screw feed in the bottom of the hopper which forces the amalgam through the knives. An air stream blows it out of the nozzle in a flame the size and character of which can be regulated somewhat by the air. Other burners similar to this are now being tested. If they are successful the field for amalgam may be enlarged.

of the sturgeon. The manipulation frees the caviar of most of the water.

The operator overseeing the amalgamators determines the proper injection of oil by the color of the ash water which runs from a small quantity of the plastic mass which he dips up with his hand or a drain dipper. If coal and oil are in the right proportions, none of the coal wastes in the ash water.

From the two batteries of amalgamator cells the amalgam and ash water from the two lines of flow through the mill reunite and are elevated to traveling screens. These drain off the ash water and discharge finished amalgam to a conveyor delivering it to a load track outside the mill, or to storage piles.

Thus, beginning with high-grade slack and fuel oil, the Toledo plant produces raw bulk amalgam. It contains on an average 4 per cent of ash, though this can be reduced still further by fine grinding; its volatile content is about 40 per cent and its heat value may run as high as 16,000 B.t.u. It is clean, good fuel. The problems of merchandising begin at this point.



Machine to Compress and Wrap Bricks of Amalgam

It has not been put into commercial operation yet, but has been developed to aid in the marketing of Trent "super-fuel" at the Toledo plant. The raw amalgam is fed through the hopper into a compression chamber where the 25-lb. bricks are formed and moved out to the wrapping table where the flails envelope them in oil-proof paper and deliver them wrapped and sealed at a possible rate of 300 tons per hour. Dropping a clean brick into the household furnace two or three times a day supplants the dirty job of shoveling coal.

Cost is one of these problems. The bulk amalgam costs approximately \$6 a ton at the plant ready to load out. Even though the efficiency of this fuel may be twice that of the 85-per cent or dollar screenings which have been used in its manufacture, it cannot, in most localities, be offered in competition with the screenings for stoker-fired steam use. However, there are some small hand-fired steam plants and many heating plants such as bakeries and apartment-house heating boilers where it makes a real appeal because of its cleanliness, its quick response to draft and dampering and its ability to hold fire for long periods when checked.

But the principal immediate field for amalgam appears to be in the households of the country. Judged on a comparative basis of price and performance it might be sold in competition with any soft coal including Pocahontas, and in some regions, with anthracite.

It was tried in many heating furnaces principally in and around Toledo and Detroit, Mich., but 3,500 tons of it was shipped in one cargo to Duluth, Minn. Sales agencies were established in both Detroit and Duluth. The fuel could be fired loose into many types of fur-

naces, but the necessity at once arose for some more compact method of shaping it. For experimental purposes bulk amalgam was put in bags made of waterproof paper. This was not entirely satisfactory because of the difficulty and expense of sacking and handling these odd-shaped packages and because the paper softened under the oil and tore too easily.

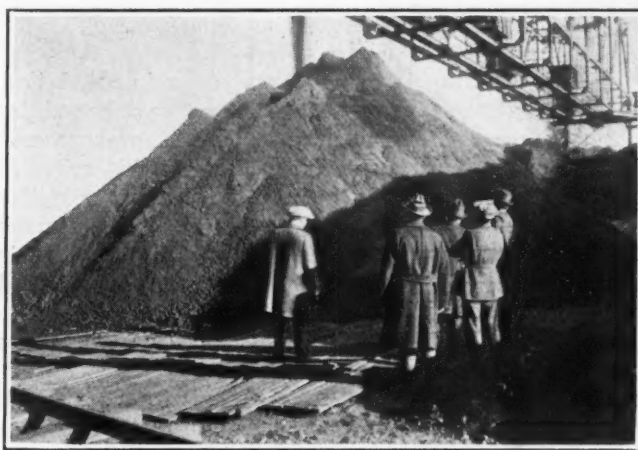
Then it was decided that the amalgam should be made into bricks. It was considered advisable to pack the fuel in 25-lb. bricks measuring 4x8x14 in. That size and shape might lend itself best to handling in dealers' yards and in house basements. Such bricks, if wrapped in oil- and moisture-proof paper, would provide a maximum of cleanliness, a minimum of breakage and would convert the shoveling of coal into a furnace to the simple process of dropping a brick through the firedoor twice a day.

No machine had been devised for the manufacture of such bricks. However, a man of real inventive genius is now bringing out a bricking and wrapping machine which doubtless will be used. An addition to the Toledo plant is now in process of construction which will house this first packing machine probably sometime during January or February. The machine, barring accident and breakdown, is expected to turn out 300 tons of amalgam bricks a day.

QUICKLY REGULATED BY DRAFT

The amalgam when fired in bulk in a domestic furnace must have always a clear draft through the firepot and the damper in the flue must be at least partially open nearly all the time. Sufficient air must be admitted on top of the fire through the fire door slide to obtain proper combustion. The fire can be controlled largely with the ash-pit draft. It is so quick to respond to the opening and closing of this draft that it can be raised within a few minutes each morning to a tremendous heat and can be quickly slowed down for the night.

It is claimed that heat in the firepot of an average furnace burning amalgam is 500 deg. higher than that of any coal. Some of the draft difficulties encountered in burning bulk amalgam in furnaces may be obviated when the fuel is sold in packages. The coking quality of the Pocahontas coal in the amalgam will tend to preserve the shape of the block while it is burning, so that this may help to hold the firebed open.



Bulk Amalgam from Toledo at Duluth Dock

A shipment of 3,500 tons went to the Head-of-the-Lakes during the early fall to create demand for this fuel in the present year.

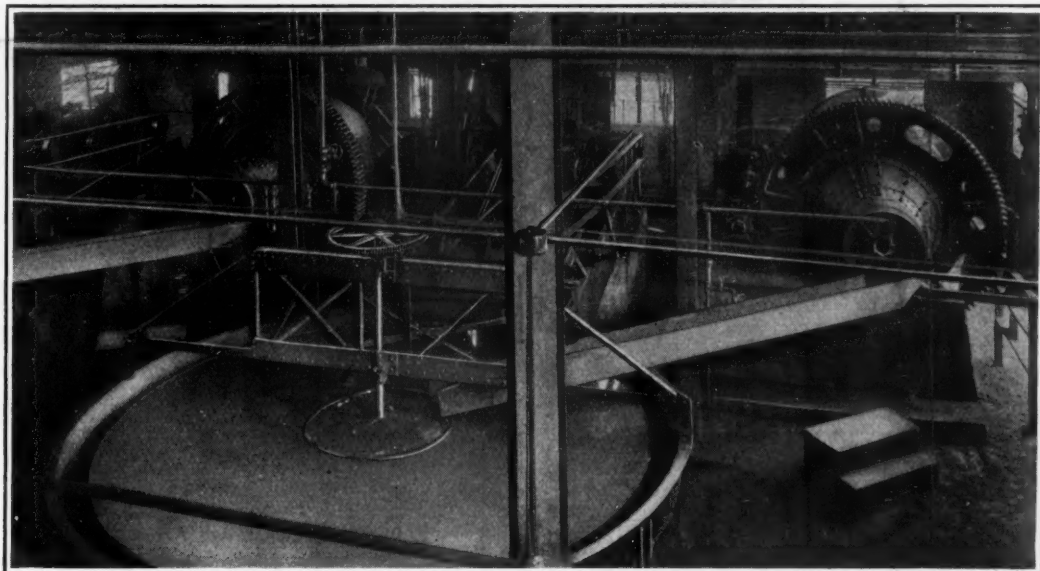
Amalgam from the Toledo plant has been selling in Detroit for \$11 to \$13 a ton which practically eliminates it from the steam field. If it is possible to get in-transit freight rates on the coal from the producing field to a consuming center like Detroit, so that it can be stopped at Toledo enroute for "manufacture," then a part of the price handicap can be removed.

The existing spread is considerable between Hocking and smokeless slack at 85 cents or \$1 at the mines on the one hand and the same coal in the form of amalgam at Detroit offered at \$11. But the producers of amalgam claim it is not the same coal at all, nor anything like it. By the time the coal becomes amalgam, ash has been reduced 50 to 95 per cent, the thermal value has been raised markedly, the coal-oil combination is twice as efficient and, therefore, is a different fuel entirely. This is true and by the same sign it is one of the stumbling blocks in the way of securing the desired in-transit rates.

A great deal of expansion in the field for amalgam may be effected by the new burner which is being developed at Toledo. This device is expected to produce the effect of powdered coal in the furnaces of small steam plants and locomotives. But amalgam eliminates all the dust dangers that often attach to the handling of powdered coal. In the case of a small plant the amalgam might be dumped in bulk into a bin and handled from that point by conveyors to the screw which

Interior of Toledo Plant

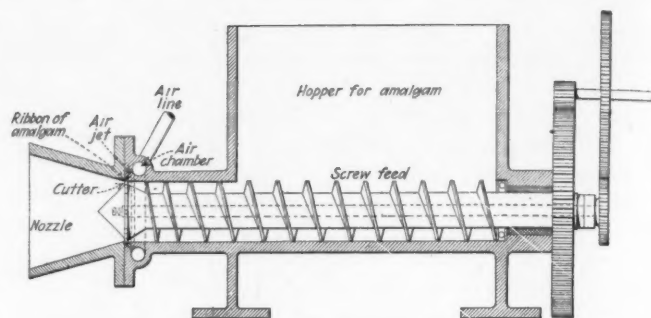
Crushed coal is fed to the two ball mills in the background which pulverize in water and deliver through the launders to the classifiers. There a separation is made, coal of 100-mesh and finer overflowing to ducts running to the amalgamators. Coal coarser than 100-mesh is raked back to be run again through the ball mills.



feeds the burner, thus simplifying fuel handling to the nth degree.

In designing the burner it was borne in mind that amalgam is merely ash-free pulverized coal bound together by the cohesive strength of oil. The purpose of the burner is to overcome mechanically this cohesive force and intimately mix the resultant minute particles with the air. This mixture is readily ignited and burns in suspension, giving a clear white flame which is characteristically soft, due to the fact that it is expended in the nozzle of the burner.

The burner itself consists of a hopper or bin in the trough of which operates a screw conveying amalgam forward and compressing it so that it is forced through an annular opening in the form of a thin tubular ribbon. A high speed cutter divides it and two air jets



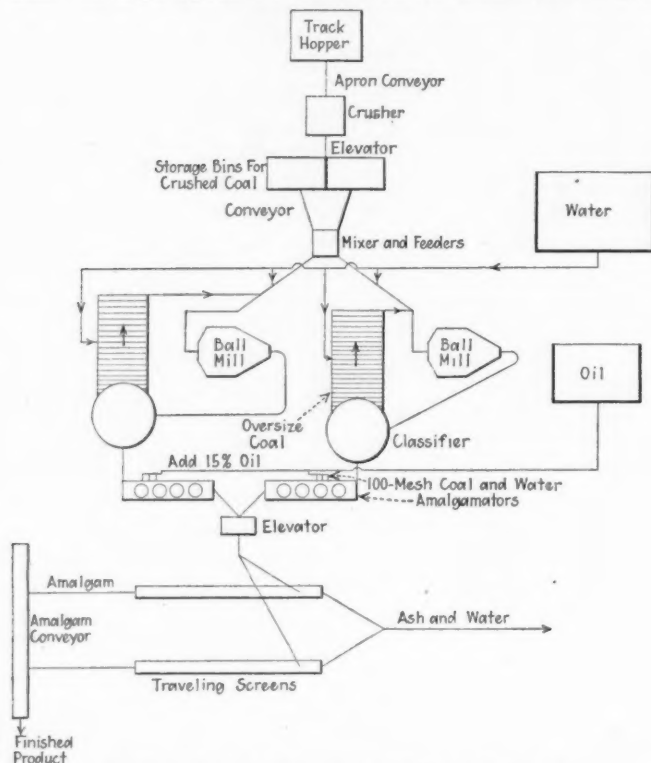
Feeds Amalgam By Air Pressure

With this device which is now being tried, it is hoped that amalgam can be fed under air pressure into fireboxes of steam plants and locomotives and be consumed as pulverized coal.

play upon it delivering it through a flaring nozzle into the combustion chamber. This disintegrates the fuel and provides air atomization. The resultant mixture is then expanded to a low velocity in order that the flames may be soft and short. The fuel—practically pulverized coal of minimum ash content—is expected to burn completely while in suspension. When this article was written, no boiler test runs had been made with the burner so that no performance data were available.

The Trent amalgam process, which was developed in the Alexandria, Va., plant, is now being advanced by a number of interests. The four concerns that are now licensees in this country are the Corbin Coal & Coke Co., of Spokane, Wash., the Pittsburgh Trent Corporation having subsidiary plants operating under licenses given to the Ben Franklin Coal Co., of Clearfield, Pa., and the Lounsberry Coal & Coke Co., of Moundsville, W. Va., and the Trent Superfuel Corporation of New York, which has a plant in Newark, N. J. In France, a plant is operated by the Société des Combustibles Purifiés of France, at Lapugny. A plant may soon be erected in Brazil by two Americans. American plants may be established soon in Providence, R. I., Kansas City, Mo., and Sarnia, Ont.

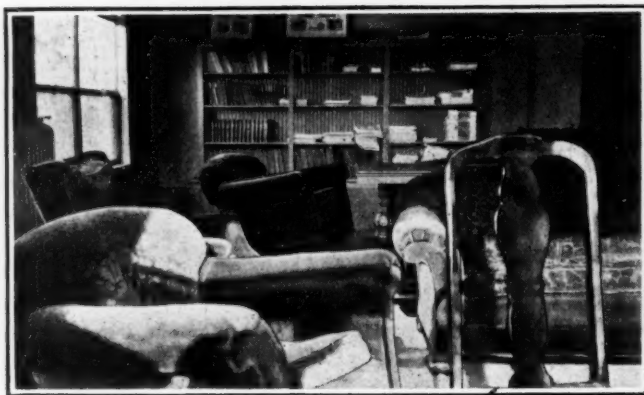
The Ohio Trent Coal, Coke & Amalgam Co., which operates the Toledo plant, has as its officers: Victor J. Silliman, president; R. A. Prout, treasurer and F. Maurice Bruns, secretary; Henry R. Mallory is plant manager and E. F. Johnson, sales manager.



Flow Sheet of Operations at Toledo Plant

Showing progress of material to finished amalgam. The double storage bin makes it possible to store low- and high-volatile coal apart, and they can be mixed in any given ratio.

Coal Company Provides Recreational Facilities in New Office Building



Recreation Room in O'Gara Coal Co. Building

When the old offices were destroyed by fire a new building was erected by the O'Gara Coal Co., in Harrisburg, Ill. Every detail has been provided to make the building a safe and pleasant place to work. Fine hotel accommodations are provided for officials of the company who visit from the Chicago office; no need for them to worry about where they must sleep at night. They have well-appointed rooms in the office building.

Standardize Track, Increasing Speed and Safety And Lowering Labor and Repair Costs

Mines May Well Imitate Railroads in Track Material
Standardization—Parallel Ground Throw Switches Preferred
—Savings Made by Eliminating the "Factor of Ignorance"

BY A. A. CULP
Birmingham, Ala.

LONG AGO the railroads of the country realized the economic necessity for a standardization of their track materials, although today the various roads use slightly different designs, each has its own standard for every item of material that goes into its trackage. Few mining companies, on the other hand, have studied the possibilities for saving by a standardization of their track material and maintenance practice, even though they know that their production is limited to the capacity of their haulages and that transportation expense forms a large item in their mining costs.

On account of this lack of standardization and in most cases, lack of knowledge of the design of their materials, many companies buy, more or less, on the basis of low price. Frog and switch manufacturers are often compelled, therefore, to offer cheaply constructed materials in order to compete for business.

I was engaged in standard-gage steam-railway construction and maintenance work for fourteen years and during the last three years have had frequent occasion to study underground mine transportation conditions. Experiment has proved conclusively that standardization of materials and methods in underground track-work will not only reduce construction expense but will lower the costs of the maintenance of equipment, reduce the amount of rolling stock necessary and increase the production of the mines.

CUTS TRACK MAINTENANCE COST

Track maintenance cost will be lowered because any piece that becomes worn out or broken can be replaced readily with another of exactly the same dimensions. As an example, if a No. 4, 40-lb. frog in a motor turnout has to be renewed, unless the new frog is of the same length from the theoretical point to the toe and from the theoretical point to the heel even though it be a frog of the same number, cutting and redrilling of the rails and re-aligning of the turnout, will be necessary. The same is true of the switch points. The new pieces may be of the same length but have a different heel spread and therefore a different angle.

The clips, or cuffs, that are fastened to the points and hold the head rod, or the head rod itself, may be of different dimensions and of different drilling from that of the part to be replaced. In such a case it is unlikely that a good fit will be made without redrilling. In all probability the blacksmith will be called on before the job is finished. In like manner a switch stand may be designed for a different throw than the one it is to replace, making it necessary to redrill the head rod to suit the new throw.

Probably no two frog and switch manufacturers have the same design or adhere to the same general dimensions for a frog of the same angle and rail section.

Neither do they necessarily have the same angle for switch points of the same length and rail section. Consequently any saving in labor is to be realized in turnout maintenance, all frogs and switches, either should be purchased from the same manufacturer, the catalogued design being specified, or the mining company's own designs should be submitted to various manufacturers for competitive prices. The best results will be obtained by the latter practice.

DESIGN LAYOUTS TO SUIT SYSTEMS

Track layouts and materials should be specially designed to suit the transportation and mining systems employed and the type of equipment used. In order to determine the proper design of motor turnout, for use in any mine or group of similar mines, the following considerations should be taken into account: (a) The lightest turnout curve is obtained by making the length of lead (distance from the theoretical frog point to the actual switch point) a distance that will give a simple curve starting from the tangent at the heel of the switch and ending at the tangent at the toe of the frog. If the lead is made either longer or shorter than this distance, a shorter radius of turnout curve will result. (b) The angle of the switch points should be small, so that a locomotive in entering the turnout will not have to change direction too abruptly or be compelled to reduce speed too much in order to prevent climbing the point or turning it over by lateral thrust. This angle should be sufficiently large, however, to leave room at the heel for inserting track bolts. (c) The larger the frog angle, the shorter the length of curve into the cross entry. (d) A short lead is desirable as it is often necessary to trim the rib for the turnout, and this, of course, lengthens the span of unsupported mine roof.

A table should be compiled showing the length of lead for every possible combination of angle and length of frog and angle and length of switch. With a knowledge of the requirements, it then will be a comparatively simple matter to select the most desirable combination.

In the accompanying illustrations Fig. 1 shows a No. 4 turnout with all dimensions necessary for the use of the mining engineer and for the correct installation of the turnout by the trackmen. It gives the distance that the theoretical point is ahead of the actual switch point, which former point is the place where the trackman must bend the stock rail to make the same angle as the switch. It shows the necessary spread of the heel of the switch point, from the stock rail, to give the angle. The lengths of the two rails connecting the frog and the points, and the quarter and middle ordinates for bending the curved connecting rail, also are shown. The spacing of the switch ties is given, so that they will be properly placed to suit the design of

the frog and switch and so that all joints, except those at the heel of the switch, will be properly supported.

The curve into the cross entry should not be started at the point of switch, as is customary in most mines, because this does not make allowance for the angles of the frog and switch points and the fact that they are tangent to the turnout curve instead of being curved to the turnout radius. The curve into the cross entry should start at the heel of the frog, as it bears no relation to the turnout curve itself.

SWITCH NOT APT TO "SPLIT"

Fig. 2 shows the detailed design of the switch used in the turnout of Fig. 1. Plates are put on each switch tie to provide a uniform bearing and fit for the points against the stock rail. These plates protect the ties against mechanical wear and permit the points to slide more easily. The joints at the heels of the switch points are supported instead of being suspended, so that the weight of a car or locomotive cannot depress the heel. Such a depression would probably raise the point sufficient to allow the cars following the locomotive to "split" the switch and derail the train.

A special slotted plate is shown for the support of the heel joint. This insures a perfect fit of the point against the stock rail, because the base of each sets in a separate groove, with a shoulder between, and the trackman cannot make the heel spread different from that for which the switch point was designed. This shoulder also helps prevent the lateral thrust, caused by the locomotive in changing direction upon entering the turnout, from spreading the track at the heel joint thereby allowing the point to move a little away from the stock rail. The clips are bolted to the points instead of being riveted or welded. This is done so that either a clip or point can be renewed, when one is broken or worn, without having to renew both. The clip bolts are far enough down from the top of the rail to prevent them from being cut off by standard-locomotive or car-wheel flanges.

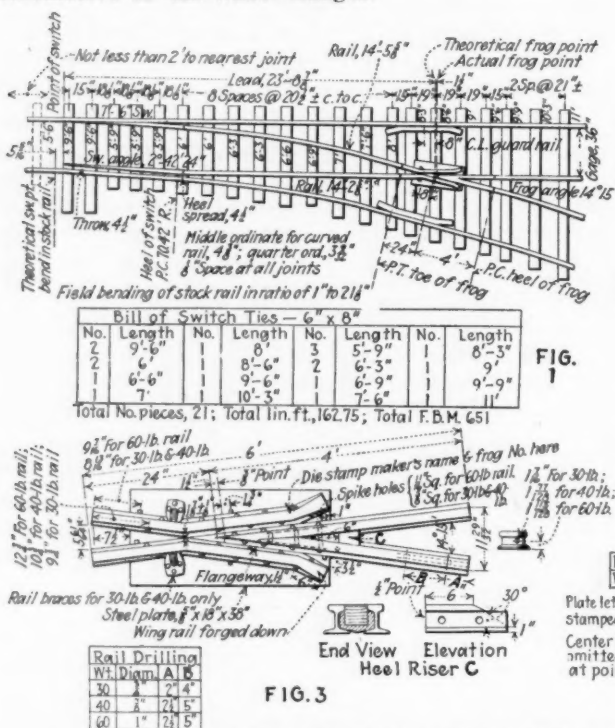


FIG. 3

Figs. 1, 2 and 3—Turnout, Switch and Frog Details for a Track of 36-In. Gauge

Fig. 1 shows a No. 4 room turnout with tie spacing, tie lengths and other details, so that the trackmen can readily install it.

Fig. 2, affords the details of the switch with the exception of the stand, and Fig. 3 shows in detail a No. 4 rigid frog. This

Fig. 3 shows the No. 4 frog used in the turnout. It is sufficiently long to prevent it from "rocking" if a tie is not tamped up securely or in case the joints become a little loose. Instead of the usual small base plate, to which the point and wing rails are riveted, a plate long enough to bear upon three ties is used. This not only makes the frog stronger because of more rivet space, but provides a better bearing and eliminates mechanical wear on the ties.

The heel riser, through which the point rails are bolted or riveted together, is also designed to act as a rerailer in case a wheel leaves the track behind the frog. The wing rails are flared out and beveled down so that no loose chains or other dragging parts can catch upon them. Because the necessary depth of wheel flange-way prevents the use of throat blocks in the 30- and 40-lb. frogs, rail braces are riveted to the base plate to give extra strength at this weak point. In frogs constructed of 60-lb. rail, or heavier, cast-iron throat blocks are used, through which the wing rails are bolted together.

Fig. 4 shows a bent-rail type of guard. The 30-lb. section is bolted to the stock rail through pipe-nipple separators but cast-iron end blocks, as shown in Fig. 5, are used for 40-lb. rail sections or heavier. These end blocks afford a more substantial job and also act as foot guards and car rerailers. A better type of guard for 40-lb. rail sections, or smaller, is shown in Fig. 6. This is simply a 4x6-in. angle, the long leg of which is passed under the stock rail and spiked to the ties with the outside spikes of the rail.

PARALLEL-THROW SWITCH USED

Parallel ground throw switch stands are generally considered safer for mine use than those having levers operating at right angles to the track. The parallel-throw type places the man operating the switch farther away from the rail and in the clear of the train. Because the necessity to meet competition in price makes cheap construction necessary, only a few manu-

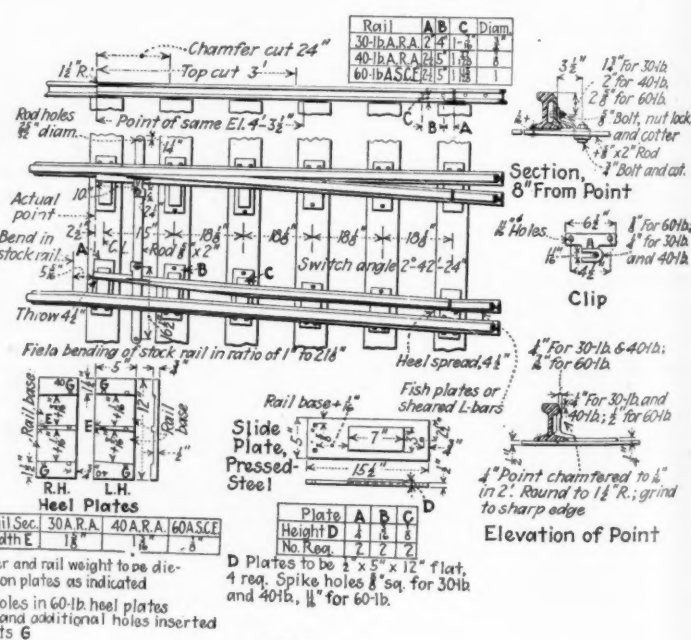
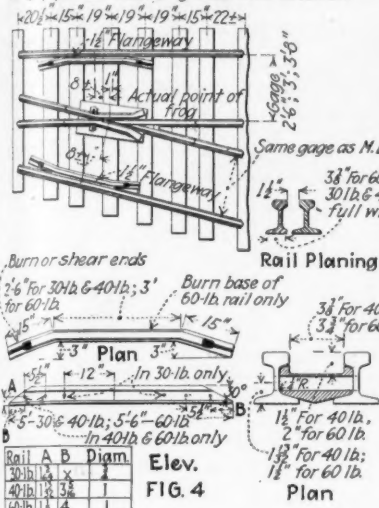


FIG. 2

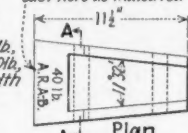
frog has 3-in. pressed-steel braces riveted to the frog plate slightly ahead of the throat.

Cast iron end blocks used with 40 lb and 60 lb guard rails.
2-3" pipe thimbles, 28" lg. used with 30 lb rail



Rail referred to is 40 lb. A.R.A. and 60 lb. A.S.C.E.

Rail section to be cast here as indicated



Plan

A

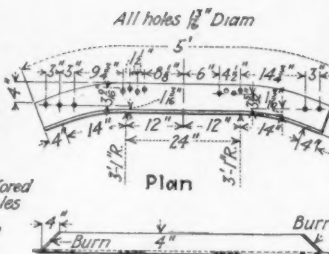
3 1/2" for 40 lb.

3 1/2" for 60 lb.

1" Cored holes

Elevation

FIG. 5



Plan

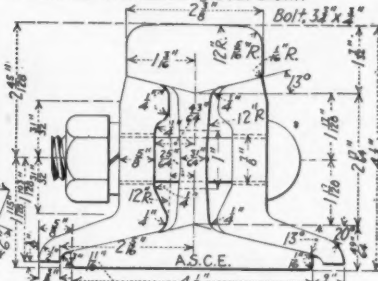
Elevation

Steel angle 1/2" x 4" x 6" x 5" for 30 lb.

and 40 lb rail

FIG. 6

Commercial standard angle bar shown



Plan

Elevation

Steel angle 1/2" x 4" x 6" x 5" for 30 lb.

and 40 lb rail

FIG. 7

Figs. 4, 5, 6 and 7—Details of Guard Rail, End Block, Angle Guard Rail and Standard Rail Section

Even guard rails should be standardized. For heavy sections the bent rail guard, as shown in Fig. 4, is preferable. For lighter rails the angle guard, shown in Fig. 6, should be used. This latter guard is held

in place by the rail spikes. The cast-iron end block, shown in Fig. 5, holds the track and guard rails to definite position with no chance of their spreading. A series of drawings, such as Fig. 7 but covering

the various weights of rails used at a mine, should be furnished each track foreman. This will facilitate his work by giving him the exact dimensions of each rail used.

facturers build substantial, light, parallel ground throw switches for mine track use. The stand should give the amount of throw for which the switch was designed, otherwise an unnecessary cost for redrilling the head rod, will be entailed. Such a throw should also be adjustable so that any play that may develop in the switch points, as a result of wear, readily can be taken up.

ADOPT DEFINITE RAIL STANDARD

One of the standard rail sections should be adopted, and all orders for rail should be accompanied by drawings showing this section and the drilling desired. The drawing should also show the punching and slotting of the splice bars. (See Fig. 7.) Copies of these drawings should be furnished the trackmen so that they may know what size hole to drill and bolt to use for the different weights of rail. It will also help them with the necessary identification of rail weights.

If all materials and methods are standardized as already outlined and the trackmen are instructed properly, they will soon become proficient in construction and maintenance work, and an appreciable saving will be realized through the elimination of the "factor of ignorance." The crew will not lose time waiting while the foreman figures out how the job should be done in order to make everything fit.

If the materials and layouts are properly designed and installed, better track will result. This will mean fewer derailments, less wear and damage to the rolling stock and therefore, lower costs for maintenance of equipment. The output of the mine will be raised both because of the greater speed that can be attained and the reduction of damage to the equipment, which in turn will reduce the quantity of rolling stock needed to operate the mine efficiently.

SPECIFICATIONS FOR RIGID FROG

The specifications for the No. 4 rigid frog require that the rails shall be riveted to the plate with 3/4-in. rivets staggered and flattened to be 1/2 in. on the underside of the base plate. The point is to be riveted with two 3/4-in. rivets with heads flattened to 1/2 in. The

heel riser is to be riveted to the point rails with two 3/4-in. rivets. The rail braces are to be riveted to the plate with three 3/4-in. rivets each. The heel riser is to be made of grey iron and is to fit the fishing angles and the web of the rail snugly.

The rail braces for 30-lb. and 40-lb. rail are to be made of 1/2-in. pressed steel and shall be riveted to the plate, ahead of the throat. A 4-in. grey cast-iron throat block, instead of braces shall be used when 60-lb. rail is specified. The block shall be bolted through the wing rails with one 3/4-in. frog bolt fitted with a lock nut. The purchase order number shall be painted on the web of the point rail with white lead. The maker's name, the frog number and the rail weight shall be die-stamped plainly on the ball of the wing rail at the forged end. The rails to which reference is made are 30-lb. A.R.A., 40-lb. A.R.A. and 60-lb. A.S.C.E.

Not Advisable to Inhale Too Much of Any Kind of Dust, Sharp or Smooth

In order to determine the suitability of different kinds of rock dust for use in mines, not only is the dust chemically and petrographically examined at the Pittsburgh experiment station of the Bureau of Mines, but studies are being conducted on animals. Animals are exposed in chambers to a known concentration of dust. The dusts used as basic types are coal dust, as the type to which men will necessarily be exposed, and quartz dust, as the most dangerous type of dust that might be added for the prevention of explosions. Limestone dust, shale, and kaolin dust are also being tested. From these studies it is found that limestone dust has no more effect than coal dust in the production of fibrous tissue, but the kaolin, or silicate dust, has an effect similar to that caused by quartz dust. The Bureau of Mines in Serial 2660 calls attention to the fact that any dust is harmful, if breathed in high concentrations. Coal-miners' phthisis, or miners' asthma, is now comparatively rare and is disappearing due chiefly to good ventilation in coal mines.

*Rock Falls Constitute Our
Greatest and Oldest
Coal-Mining
Menace*

*Most Dangerous at Face
Because Noise Drowns
Premonitory
Sounds*



Safety Movement Stirs Illinois Mining Men

Saturation with Water Did Not Save Utah Mine from Explosion — Evil Effect of Water on Illinois Mine — Putting Out Fire with Rock Dust — Dangers of Loose Standing Coal and of Big Outputs

BY E. W. DAVIDSON
Associate Editor, *Coal Age*
Chicago, Ill.

LIVELIER INTEREST in mine safety in Illinois and elsewhere may be stirred up as a result of the Illinois Mining Safety Conference held at Springfield, Ill., Jan. 15 and 16. It was arranged jointly by the National Safety Council's mining section, the state department of Mines and Minerals, the U. S. Bureau of Mines, the United Mine Workers of Illinois, the state operators' associations and the Illinois Mining Institute. This variety of interest is trying to join forces for constructive safety work such as may grow out of the national safety conferences to be fostered by President Coolidge himself.

The program at Springfield covered a large part of the field of mine safety with special emphasis on rock dusting, safety education and the need for more of that most important of all safety factors—the active interest of every man having to do with a coal mine from the president down to trapper boys, not omitting the United Mine Worker officials. Mining men of all degree listened to the papers and took an active part in the discussion.

The Springfield conference was the second such safety meeting arranged by the agencies co-operating in it. The first was at St. Louis, Mo., last fall. The two-day session of last week indicated that the forces behind the movement are pouring more of their power into something really constructive than they ever have done jointly before. The meeting gave such union officials as Illinois President Farrington and Vice-President Fishwick opportunity to voice the new attitude of fairness and reason in their relations with operators, both

along lines of safety and every other sort of interrelation. The conference formally urged the Illinois department of education to put first-aid training into the public school curricula. It arranged for another safety conference at Peoria, May 15, when the state mine inspectors meet there; it petitioned the Bureau of Mines to hold the international first aid and safety meet in Springfield next fall and arranged also to help make safety a live issue at the next meeting of the Illinois Institute in the summer.

The four sessions of the Springfield conference were presided over by four men representing, as truly as possible, the widely separated interests which are co-operating in these joint safety meetings. H. C. Adams, a coal operator, ran the first session, Frank Farrington, head of the Illinois Mine Workers, the second, Martin Bolt, head of the state Department of Mines and Minerals, the third and Herman C. Perry, an operating official, the last. W. Dean Keefer represented the National Safety Council and is secretary of the joint committee which directs the conference activities.

H. C. Adams, president of the Peerless Coal Co., presiding at the first session, made an appeal for greater interest in safety by the men in mines saying no mine can be safer than the operators and men will make it. He said operators are realizing more and more their own responsibilities. Investigators of accidents should outline not only the causes but the appropriate cures. In his belief eye accidents are altogether too frequent. Cheap goggles on every miner would reduce the total. Mr. Adams argued for physical ex-

aminations of every mine employee. It would reduce accidents by guarding against the entrance of a man into a job he couldn't continue to perform.

Martin Bolt, state director of the Department of Mines and Minerals, greeted the meeting in an address of welcome. He said he understood that President Coolidge was about to call a national mine safety conference, but he was pleased to note that Illinois is going ahead of the country in doing that very thing.

SAFETY FROM ROOF-FALLS

More than 55 per cent of the major accidents underground are due to falls of coal, said C. E. Anderson, mine manager of the Valier Coal Co., Valier, Ill. He said this is partly due to the miner's own carelessness or failure to take down loose coal. He proposed: (1) Greater care on the part of the miner, enforced by closer supervision; (2) better propping of roof with timber also enforced by better supervision and (3) the use of a good tool-steel pinch bar 5 ft. long with which to work down loose standing coal. This bar should be sharp at one end and have a flat bit on the other end 6 in. long bent at an angle of 22 deg. for leverage. He thinks the use of such a bar should be compulsory in every mine.

F. F. Green, superintendent, Valier mine, also discussed the accidents that take place at the working face, the percentage of face accidents is high partly because noise at the face prevents a man from hearing warning sounds of weakening roof or coal. Carefulness by the man himself is the best preventive. He touched upon various standard methods of mine protection, especially rock dusting from faces outward to prevent coal-dust explosions which Mr. Green thinks is the greatest of all face dangers. He advocated safety organizations in every mine. They should comprise the mine management and a safety engineer. Such safety committees should meet regularly.

LONG BAR BRINGS DOWN COAL SAFELY

The 5-ft. bar proposed by Mr. Anderson caused some discussion. One man said if coal is snubbed properly it would not hang or stand and there would be no use for the bar. "Give the miner every little help you can. The operator could furnish such a bar to every man in a mine for the cost of one lost foot or hand and then some," was the comment of Inspector Haskins.

Inspector Tom English believes in the pinch bar but not one with a sharp point on one end. He is afraid the miner will get that point thrust into his body. He is an old-time miner and recollects that miners long ago used more tools. Today a miner is not methodical enough to use picks and pinch bars. He wants nothing but a keg of powder and a big shovel. Inspector Thompson said men today are not sufficiently disciplined to make them use the tools and safety devices that companies provide. It may be mostly the miner's fault, but somebody must compel discipline.

Safety Inspector McIlarny of the Crerar Clinch Coal Co., said safety rules actually enforced save lives. His mine rules provide that on grades over 4 per cent, trips must carry drags, timbering must be carried to within 8 ft. of faces before the coal is shot, first-aid equipment must be always within 2,000 ft. of advancing workings, etc., and these rules are compulsory. Men are discharged for not obeying them.

Safety Inspector Bannister of the Madison Coal Corp.,

said that the co-operation of the officials of the United Mine Workers, all the way down from district president, is necessary in order to get complete obedience, but Harry Fishwick, vice-president of the Illinois Mine Workers, declared that the operator often made such a course difficult. Mr. Fisher had often been condemned by union members for assisting in the discharge of a union man for failure to obey rules at mines where the operators were violating law and were not penalized. Inclosed safety lamps ought to be compulsory, he said, but the company ought to be compelled to move gas everywhere and all the time. He thinks companies too often let down on safety as soon as closed lamps are installed. There are two sides to every such case. In Illinois the Mine Workers are not defended when they break the rules laid down under the contract. "Of course," said he, "we try to get the miner's job back because getting fired once may make him a safe miner, but in accordance with our contract we back up the rules."

He took a gentle crack at Mr. Green's and Mr. Anderson's Valier mine for rushing one day to a production record which

"may have been made" by over - speeding "green" men and forgetting for the time being, strict adherence to safety rules. He argued strongly for more systematic timbering and for the spragging of face coal while it is being worked.

Mr. Green answering Mr. Fishwick's remark that miners with closed lamps often fail to move gas, said any good miner knows there are places in even a safe mine which cannot be cleared of gas



Martin Bolt

State Director, Department of Mines and Minerals, who greeted the safety men.

every hour. They are temporarily inaccessible, and gas troubles do sometimes result. But precautions to stop such trouble after it starts can be taken with rock dust, as at Valier.

Inspector Haskins blames breast machines for many of the squeeze accidents at the room face because with such equipment a man has to be too close to his coal. Shortwall machines are less dangerous.

MINE FIRES AND HOW TO FIGHT THEM

C. A. Herbert of the U. S. Bureau of Mines from the Vincennes, Ind., rescue station, made an address on "Mine Fires and Fire Fighting." The principal causes of fires, he said, are open lights, defective wiring, black powder and spontaneous combustion. After speaking of safety lamps he argued for well known safety practices such as fireproofing motor charging stations and ventilating them, fireproofing entry stoppings and overcasts, etc. He warned his hearers against the danger of the spontaneous combustion of oily waste and rags. Fires may also be started by piling coal at too great a depth. Rags should be placed periodically in metal containers. Water piped throughout a mine is one of the best means of protection. In any event mines should maintain portable chemical fire-fighting outfits.

He pointed out the dangers of explosions within newly sealed-off fire areas before the men who put in

the seals can get away. He advised them not to take too much time in making the last seal or two on the return side of the fire absolutely tight. A little escape space is not bad, and men will have a chance to get away and have a rest before going back to finish the job after the fire has cooled down. He made many other fire-fighting suggestions.

George K. Larrimore, representing a powder company, argued with Mr. Herbert over the Bureau's recommendation that all coal be shot with permissibles. The Springfield region is all on a solid-shooting basis except two mines and therefore uses black powder extensively. Mr. Herbert agreed that permissibles will not do in solid shooting but he insisted that they are better than black powder, even in non-gaseous machine mines because of the danger of transporting the latter explosive through the mines. Mr. Herbert expressly stated that the Bureau does not ask national legislation to compel the abolition of black powder.

FARRINGTON PLEDGES CO-OPERATION

The Mine Workers officially took a hand in the conference, especially during the afternoon session of the first day when Frank Farrington, president of the Illinois Mine Workers, presided. He said that although Illinois mines are as safe as any in the country, yet much remained to be done toward safety. "And," said he, "the Mine Workers can be counted on for both moral and financial aid."

Legislative remedial measures have been enacted partly by Mine Workers' activity, and further effort along this line will be made. He was glad to see the interests represented at the conference becoming unified in the cause of safety and thought there never should be any trouble getting safety legislation when such a combination of interests asked it.

The first-aid team trained at the Springfield station of the state Bureau of Mines put on a demonstration working out several problems at the front of the hall under the direction of James Clusker, station chief.

At Mr. Farrington's suggestion the conference petitioned that next summer's International First Aid and Mine Safety Meet be held in Springfield, and W. D. Ryan of the Bureau headquarters in Washington, was asked to communicate the petition to the Bureau headquarters in Washington. The big state arsenal in Springfield is considered a good place for such a meet.

ROOF PERSISTENTLY TAKES TOLL

George L. Mercer, statistician for the Illinois Mine Workers, declared that in this country the mining accident rate is higher than in any other industry. He said that in the last 36 years in Illinois one man has been killed in every 11.75 men employed and since 1883 one in every 1.38 has suffered 30-day injuries. It isn't the big explosions of gas and dust that constitute the menace; they kill only 12 per cent or so. And only about 10 per cent die from powder and 6.9 per cent from gas. But 46.2 per cent die from roof and coal falls, a cause that picks them off by ones and twos. The seriousness of these is shown in its true light only by carefully kept statistics. Thus such figures are invaluable in a safety campaign.

He said the fault is not all the miners'. Hardly a joint board meeting is held, he said, that does not show cases where miners are fired because they do consent to break the law—for refusing to carry powder under

an exposed wire, or to work in a place where gas has been detected without having been removed. He said he knew of too many cases where inspector's orders to improve ventilation and other conditions have not been obeyed by operators.

He admitted the fault in mine "unsafety" is not all chargeable to the operator. Miners often are careless. Each side should shoulder its own responsibility and carry it through. Safety might cost the operator a little more, but he'd get it back in reduced compensation, and the miner, though losing in pay some months, would suffer less lost time.

SAYS BIG TONNAGE BIG ACCIDENT TOLLS

The rush and hurlyburly of modern mining, the effort of men and operators to get out all the coal they can in the one or two days' work which is all they get each week in times like these, tends to make everybody careless. The cure cannot be made by a meeting but by co-operative effort between operator and miner, with better safety legislation and strong and continuous safety education.

H. T. Bannister, safety engineer for the Madison Coal Corp., speaking of safety in the use of locomotives, said his company uses roomy cabs for motor drivers even though this adds to the cost of the locomotives. One protective device for trolley wires at all crossovers, which his company uses, is a piece of 3-in. rubber hose split lengthwise and fastened into the hanger clamp. The trolley wheel enters easily and the hose closes behind it. Trolley wheels of 5-in. diameter spark and flash less and require less grease than the standard 4-in. wheels and therefore are safer. Red lamps operated by storage battery are better for the tail of every trip than the standard rear-end markers. These too often are not seen. Mr. Bannister made a number of other safety suggestions.

FOR BIG TONNAGE SAFETY AN ESSENTIAL

Big mines, in spite of the necessity for large tonnage, probably have the safest tracks, said Dan Carroll, chief engineer of the Chicago, Wilmington & Franklin Coal Co. They have to build heavier track and keep it in better alignment than in smaller mines. The size of the rails in his company's workings have increased on main-line haulage from the 1912 maximum of 40-lb. to 60-lb. and 70-lb. This steel is laid on rock ballast hauled in from outside. Switches are no longer made at hazard by the mine blacksmith but are bought from railroad equipment manufacturers. Even automatic electric and air switches are used.

The tracks must always be laid on sights because such heavy rails cannot easily be straightened, at least not at frequent intervals. Consequently the alignment of the track is generally better in large than in small mines. Switch ties are laid in concrete to help them to maintain their position. All such devices in tracks help to make mines safe and so compensate for the dangers that may be held to be inevitable with large production.

In the Peabody Coal Co. mines all over the country five out of every 100 injuries are due to derailments according to George C. McFadden who supervises the Peabody safety work. Often it is difficult to determine the exact cause for derailments, and consequently it frequently happens that the causes are never hunted down and removed. Seventy-five per cent of derail-

ments are due to defective equipment or crookedness of entries driven without sights. Short wheel bases, poor lubrication, bent axles, false, pointed flanges, chipped or broken flanges, varying sizes of rail on a locomotive road, worn-out frogs and switches and dozens more form part of this long list. Scrupulous inspection is the greatest factor in haulage safety.

William Keith, safety inspector for the New Staunton Coal Co., also reviewed many causes of accidents checked against mine cars. Wheels made flat by sliding, due to the failure of trip riders to remove sprags, often cause derailments. "Side-spread" cars are dangerous, of course. This defect may be the result of overloading or of the dropping of roof coal into the car by careless miners. Incidentally he would not have any trip rider wear gloves. Gloves catch in couplings and sometimes the man whose hand is thus caught loses a finger or a

to several cases where miners were discharged for slight violations of law such as overdrilling a hole $1\frac{1}{2}$ in. and firing it, at a mine where the company with impunity violated the law in even greater degree by not clearing up the gob in the roadway and not properly maintaining ventilation. Perhaps the inspectors do not compel operators to live up to the letter of the law because it costs dollars and cents. Some inspectors rose hotly to deny this.

President Farrington said one mistake the United Mine Workers have made in the past was the defense of any mine worker whether he was right or wrong. "I have done it myself," he admitted. But the operators came to take an antagonistic attitude because of it. Relations of that sort are passing. No matter who is wrong in any case, he ought to be told so. And nowadays he is told, Mr. Farrington declared.

Bad Parting

Safety from bad roof and partings depends largely on the will to be safe of the miner himself. Such a desire one would think could not fail any of us. But long acquaintance is blood brother to recklessness. The miner often delights to run risks, and does not care to put a prop if he thinks by any possibility the roof may possibly stay up without it.



whole hand. He felt that car construction could be improved by extending the running gear from axle to axle instead of merely bolting it to the car body. He said accidents caused in the rush of outgoing men to the cage can be reduced by dispatching afternoon man trips so that several from various parts of a mine never arrive simultaneously but are rotated so that the first trip today is last tomorrow and so on.

In the discussion that followed the papers there was more fear expressed that big mines are going to increase the danger of mining by their rush to get tonnage until Mr. Anderson of Valier said big tonnage was attained not by speed but by steady uninterrupted performance.

Vice-President Fishwick of the Illinois miners said the only way to stop accidents in mines is to shut all mines down, but the next best thing to do is to get complete co-operation between men and operators—and much less hostility. Miners frequently feel that safety schemes are concocted merely to save money for the operator. The way to overcome this is to get together and talk matters over honestly and sincerely—while smoking the operators' cigars.

William Daech, a sub-district official of the Mine Workers, emphasized the statement that it was believed that the safety movement was merely an effort to save dollars and cents for the operator. He referred

Coal mining is dangerous, he said, winding up the first day. Electricity and new machinery has increased the danger element. So comparison of today with the old days showing as it does a reduction of accidents per million tons and per thousand men is certainly stimulating. Great efforts toward safety are responsible. Operators in Illinois have put in precautions not required by the law, and Farrington was perfectly willing to admit it. The "dollars-and-cents impression" is prevalent, it is true he said, but that is because not everybody realizes that both sides have their problems. The miners are realizing it today. And what is more, said Farrington, their officials are preaching it to them.

WHY SAFETY DOESN'T "GO OVER"

How to maintain interest in mine safety was the vexed problem treated by Prof. A. C. Callen, head of the mining department of the University of Illinois. He feels that there is something spiritual about safety education. Safety has so intangible a quality that its appeal is similar to that of religion. So the appointment of the best safety engineer in the world can't make a safety campaign succeed. It must be sincerely believed in and preached and practiced by every man from the head of a company down. Without this nothing important can be done.

Mine safety is linked up with every other kind of

safety, said Professor Callen. The mine chief who brags about driving his automobile 60 miles an hour is losing his safety influence with his motormen underground. "I don't know," said he, "of any organization in contact with the miners that lives up to its safety beliefs 100 per cent. This is a great handicap."

INDIRECT INFLUENCES FOR SAFETY

The three greatest phases in safety progress are: education, financial or social influence and family affection. Night schools and other educational opportunities most surely operate to reduce accidents. Rewards and public recognition of safe men help give these and other men more interest in safety. Any influence that appeals to a man's affection for his family no matter how it is presented, also helps to make a man safe.

N. S. Greensfelder pointed out that statistics show there are more people killed annually in every one of ten big cities in this country than are killed by explosives in industry. J. E. Jones, safety engineer for the Old Ben Coal Corp., the nationally known rock dusting expert, in a dusting paper to appear in a later issue of *Coal Age*, said that rock dusting, doubtless, will be blamed for failures for which it has no responsibility and on the other hand will get credit to which it is not entitled. He cited the proved efficiency of rock dust and held that men should have confidence in it but not to turn to it emotionally as a panacea. He sees a danger in emotional movements rising out of mine accidents. These often compel all sorts of excessive legislation which burden the industry unnecessarily. Dusting is only one requirement that may be overdone. However, he holds that every mine which is gaseous or in which the coal dust is sufficiently inflammable to propagate an explosion should be rock-dusted.

LAYS MOST STRESS ON DISTRIBUTED DUST

Suggesting proper dusting methods, he said that rock dust should be of a fineness such that all of it will pass through a 50-mesh and 60 per cent through 200-mesh sieve. Increased fineness raises the efficacy of the dust but also increases its cost. He said dust trough barriers, such as were long ago adopted by Old Ben Coal Corp. are no longer relied upon entirely but still are considered advisable in certain locations. He described the Old Ben dusting machines whose main function is to distribute dust with sufficient force to get a thorough mixture of rock and coal dust instead of merely coating coal dust with rock. In an Old Ben mine producing 2,000 tons of coal per day the average cost of dusting entries, using 3 lb. of rock dust per lineal foot, is \$15.68 per 1,000 ft. or \$47.04 per year, using three dustings annually.

Just what mines should be dusted? This question was asked Mr. Jones by D. D. Wilcox, superintendent for the Superior Coal Co., at Gillespie, Ill. Jones answered that of course this decision depends upon the inflammable percentage of both coal dust and mine air. He said a test of Franklin County, Ill., dust at the experimental mine of the U. S. Bureau of Mines showed that dust of approximately 54 per cent ash content propagated an explosion if 1 per cent of methane was in the air, and coal dust, having an ash content of about 62 per cent would propagate in 2 per cent gas.

In Utah where the dust is more explosive he said the percentages of ash can run far higher without preventing explosibility. Mr. Jones said the coal in some mines is so resinous and inflammable in its fine state that he couldn't feed a stream of it out of his upraised hand onto a carbide lamp flame on the floor without getting his hand burned in the resultant fire.

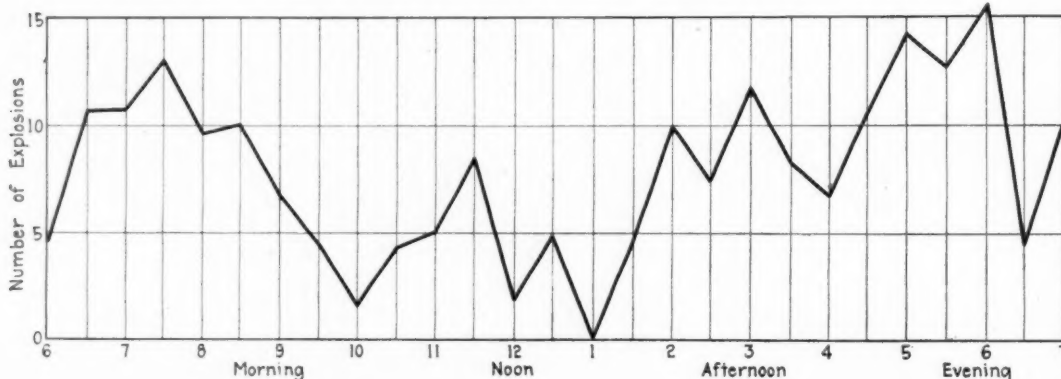
In such inflammable coal as that of Castlegate No. 2 mine, he said, water has only moderate ability to stop fires. That mine was thoroughly saturated from face to portal at the time of its terrible explosion last year, yet, when the dust fire started to travel, water which evaporates of course at less than 212 deg. at that altitude had no appreciably retarding influence on a heat wave running up to 3,000 deg. such as rushed through the mine. So water, while of value in Utah, is not to be compared with shale dust in Mr. Jones' opinion.

WHERE USE OF WATER DESTROYS MINE

In southern Illinois water cannot be used as lavishly as in the West. It decomposes the softer rock overlying Illinois coal and starts the clay bottom heaving. This simply ruins the entries. In the Old Ben mine which once was drenched experimentally, 12-ft. entries soon widened to 20 ft., and the roadways quickly became impassable. The experiment has never been repeated. Illinois coal was deposited in the Carboniferous age between the soft shales and clays of that era, while Utah coal is of Cretaceous origin between the sandrocks and harder limestones.

As a fire extinguisher rock dust of any kind greatly surpasses water and chemicals, Mr. Jones holds. He backed this up with stories of his own experiences. In one mine which had V-trough barriers but no rib coating, a roof fall grounded the trolley wire on a rail and started a fire that soon was a roaring furnace fanned by the air. Men tried to fight it by usual methods but couldn't get within 150 ft. of it, even on the intake side. So they soon gave it up and were sealing the mine when Jones arrived.

As an experiment he took a crew of men in as close

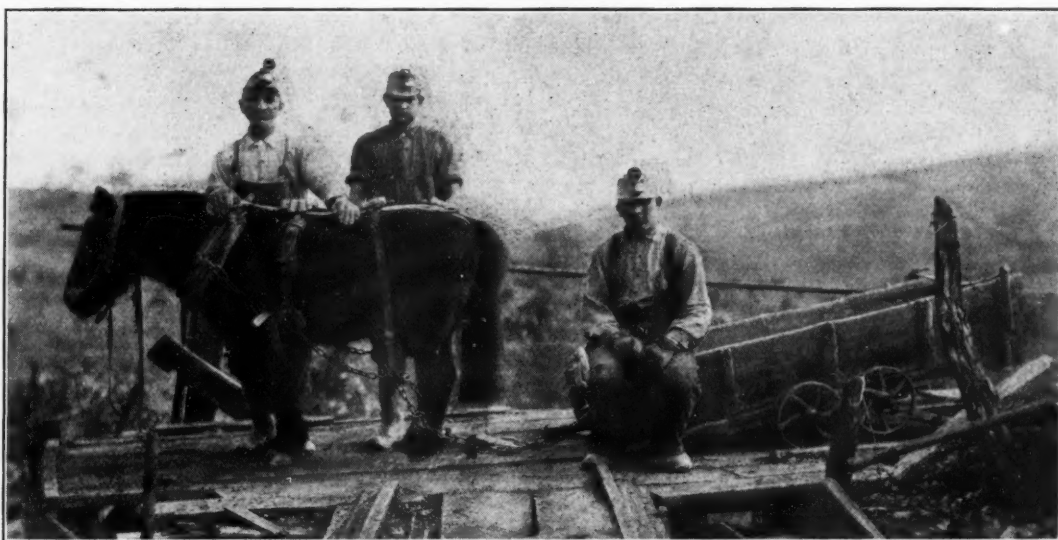


When Explosion Hazards Prevail

U. S. Bureau of Mines chart showing that when the men come to work and when shots are fired are the two dangerous periods. The first has less explosions but more fatalities. The second period is less deadly as the men are mostly out of the mine. Chart embodies sixteen year's experience.

Off The Track

In the old days when mules and ponies "moseyed" along the track, derailments were common but they were not dangerous or even disconcerting. Nowadays with big trips and high speed, derailments cost so much that no company can permit them to occur. Good engineering goes hand in hand with safety. You can't have one without the other, and tracks and cars are being brought up to the high standard of locomotive design. This shows a scene at a small Ohio mine taken during the World War.



on the intake side as possible. They began carrying up V-troughs full of shale dust from nearby barriers. These were thrown down the entry toward the fire, each one tossed a cloud of fine dust into the air which floated into the fire. After three or four had been tossed, the heat seemed lessened. So the tossers approached a step closer to the fire with each trough.

SMOTHERED FIRE WITH FINE DUST

"Before we realized it," said Jones, "we had walked clear through the 120-ft. fire zone, and the fire was out. All we had to do then was load out about two cars of burned coal and all the dust that was piled along the floor. What a difference there was between the damage done by that fire and what would have been done before that fire was put out by sealing the mine! Since then we have extinguished many small fires simply by throwing on a few handfuls of shale dust."

He said that in fighting fires with dust it must be remembered that about 72 per cent of the dust thrown into suspension on an air current settles within the first 100 ft. The great cloud which travels hundreds of feet further is deceptive. It is less effective than it appears likely to be. Therefore, although only a little in the right spot is needed, the firefighter should use enough to compensate for this large percentage of quick deposit on the floor.

NEARLY BURIED IN FLUFFY DUST

Mr. Jones thinks that both limestone and shale dust—and various other suitable incombustible dust for that matter—are somewhere near equally efficacious for mines, so far as stopping explosives is concerned. Consequently every mine should use the dust that is handiest. That is why Old Ben uses shale dust although lime dust is much whiter and thus more greatly improves illumination. Shale, however, sticks to roof and ribs better.

Shale dust, when newly pulverized, is exceedingly fluffy. So much so, in fact, that a railroad brakeman, stepping into what he thought was a car load of the denser limestone dust, sank clear to the car floor and had to be rescued. It is so fluffy that Jones has filled milk bottles to the top with it and then reduced it to one-third the volume by a few shakes of the containers. Thus it easily sifts down so that the air content between fine particles is squeezed out.

This makes it good shothole stemming. A tube of

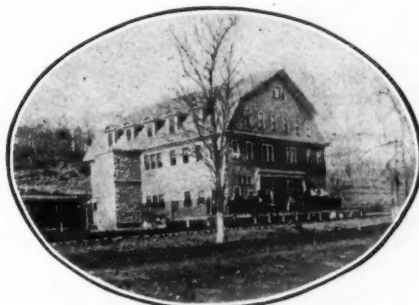
it, set near the collar of a deep and "air cushioned" hole, packs solidly in the front of the hole at the shock of the explosion and serves the purpose well.

The mine physician's viewpoint on safety was voiced in the afternoon of the second day by Dr. J. R. Higgins of the Superior Coal Co. He advanced a reason why accident statistics show high points mornings and evenings. It is because of motormen and others "speeding up," he thinks. Desire of such men as trip riders, to outdo one another in speed is another common cause of injuries. Speed on the part of almost every other class of mine worker is a common cause of accident. Men are often careless in their effort to save time.

He warned against the damage which untrained men can do to injured fellow miners, especially in trying to remove foreign matter from their eyes. He advocated first-aid equipment for every mine and first-aid training for as many men as possible.

Following Dr. Higgins' address the conference resolved that first-aid training should be taught in every Illinois school and copies of the resolution were sent to those in educational authority. Martin Bolt of the state mines' department said that some schools already give such instruction. In fact the department up to date has issued a total of about 12,000 certificates to boys and girls, men and women, in public and night schools who have taken the training and passed examinations given by state mine inspectors. The school resolution was proposed by Statistician Mercer of the United Mine Workers.

Safety methods of the International Harvester Co. were explained in the final paper of the conference by Homer D. Herron, safety director for that company.



Store and Office Building, E. E. White Coal Co., Glen White, W. Va.

A. I. M. E. Will Canvass Question, "What Is Coal?"

American and British Investigators Will Summarize Their Views and Give Their Reasons for Holding Opposing Opinions—British Will Outline the Progress Made in Elucidating the Problem

AT THE MEETING of the American Institute of Mining and Metallurgical Engineers, which will convene in New York City, Feb. 16-19, views and studies will be presented regarding the origin and constitution of coal. The symposium will bring together the results of many years' researches made by American and British geologists and chemists and the conclusions at which they have arrived as outcome of these inquiries. The symposium has been developed largely by the efforts of H. N. Eavenson, G. S. Rice and David White.

The general subject divides itself into two or three parts, in each of which, one of the two countries—the United States and Great Britain—enjoys leadership. Because of its great area, its many coal fields, their wide distribution, their different ages and their variation in volatile constituents and moisture content, the United States offers an unrivaled opportunity for the study of the geology of coals, their conditions of deposition, their transformation under geologic agencies, their relations to deformation, etc.

Unequaled opportunities are presented in this country owing to the variety of the microscopic contents

of the coals and the opportunity of tracing their changes from stage to stage, not merely from one coal field to another but even in a single coal bed. Dr. White will lead the discussion on the environments in which deposition occurred, though other contributors will doubtless revert to them.

Renault in France achieved much distinction in the microscopical study of coal and other bituminous sediments; C. E. Bertrand in the same country made detailed studies of the cannel and oil shales, and Williamson, Scott and others have demonstrated in a series of memoirs the structure of the calcified and silicified peats represented in the "coal balls" found in parts of Europe. American paleontologists have taken up this study where they left it and have achieved much success due in part to the training and experience obtained in the study of coals of low rank. Such coals are less resistant than those of higher rank to the treatment necessary in the cutting and reduction of sections whereby they are brought to the necessary transparency. The great progress made in the study

of the microscopy of coals of the higher ranks, especially the higher bituminous and semi-bituminous, and the differentiation of their fossil components is due largely to American investigators, particularly Drs. Thiessen and Jeffrey, whose technique is unsurpassed.

Accordingly, American students of coal deposits have given chief attention to the microscopic structure of coals and to the description of the geological features under which they were deposited. Dr. White, who for some thirty years has studied these coals and the plants found in them and accompanying them, will draw on this experience in contributing to the symposium.

In recent years investigators in Great Britain have laid great stress on minute studies of the coals as sediments and particularly on the chemistry of coals. Coals of different ranks as well as coals differing somewhat in original composition have been studied extensively in Europe in order to determine what chemical distinctions, if any, differentiate them. These inquiries are somewhat similar to those made some years back by a number of chemists in the University of Illinois and the U. S. Bureau of Mines to isolate

the various chemical components of coals of different ranks.

But of recent years work conducted in this manner has been regarded as somewhat unprofitable, for it has been realized that the gases and other products obtained by distillation and by solution in chemical solvents, though interesting, are obtained for the most part by the destruction of the components existing in the coal and do not, therefore, represent components actually present before distillation or solution. We are confronted, therefore, with the fact that our knowledge of the chemical character of the components of coal of any type or rank is woefully small.

Driven back, therefore, to the original substance of coal, British investigators have subjected the various physical manifestations of the mineral to careful examination. Such, for instance, has been the study of "mother of coal" or "mineral charcoal," which they term "fusain," having borrowed the word from the French. Patiently, during investigations covering years, they have devised methods to reduce the spores

SOLUTION and distillation of the constituents from coal merely determine the character of the bodies that can be derived from it; they do not show just what compounds that mineral contains. The British declare there are four ingredients of coal in practically every seam: Fusain, durain, clarain and vitrain, but American authorities regard all these as mere variations in product, depending on conditions of deposition, the ingredient organic matter, contributed to form the peat, being identical. They deny any essential differential between clarain and vitrain, both coming from densely humified boughs, trunks, etc., and they contend that durain is only mat or dull coal, the dullness of which results from the water conditions and the more complete decay of the plant debris. The fusain also is a part of the original mass of vegetation according to the same authorities. It is what miners and engineers call "mineral charcoal" and "mother of coal." In clarain the American see lenses and strips, apparently indistinguishable from vitrain, embedded in otherwise dull coal (durain). All of which difference in views suggests a battle royal.

of lycopods and other plants of low orders to exines comparable to those found so abundantly in most coals. Great success has been met by Prof. R. V. Wheeler, and his associates in the Department of Coal Research in the British Government in the differentiation of the humic or ulmic matter in coal, and in determining the relations of the ulmins to the woody matter.

Most valuable studies are being prosecuted by

British students into the weathering of different coals at different temperatures and under varying exposure to oxidizing influences. Original studies of high order are being made to ascertain the status of the nitrogen in coals and to discover the conditions that control the recovery or nonrecovery of certain compounds. Studies and important researches are also being made concerning the sulphur in coals.

A composite symposium will bring together the researches of data obtained by American and British workers in this field of research. The chemical work of the British is original, painstaking and brilliant. It has engaged the bewildering and intangible problem of the actual chemical composition of coals of different types. In this the British have gone far beyond American investigators, and the Institute will be fortunate to learn what they are doing and what results have already rewarded their efforts.

More or less radical disagreement between British and American workers is likely to be manifested in the



David White

Senior Geologist of the U. S. Geological Survey, who will be one of the leaders from the American viewpoint in the discussion, "What Is Coal?" which will take place at the A.I.M.E. meeting to be held in New York City, Feb. 16-19.

course of the symposium. The British are disposed to recognize certain variations in coal as being due to difference in the chemical composition of the original ingredient plant matter, whereas American students of the origin of coal regard the same variations as being a result merely of the circumstances of deposition or of the degree of alteration. The four types of coal which may be found interstratified or intermixed in any one bed are:

(1) "Mineral charcoal," "mother of coal" or "fusain." In the American estimation, fusain is a state of a part of the vegetation that contributed to the formation of the coal.

(2) "Durain" or "dull coal." The dullness, American investigators believe, is due to the general minuteness of the debris, the absence of humified branches and trunks, the probable intermittent exposure of the peat to air, and, especially, the presence of fusain on the laminae.

(3) "Clarain," or jet-like lenses and strips in otherwise dull matter. This coal, American research would ascribe to branches, logs, etc., becoming immersed in peat without decay and being so fully impregnated (humified) that they have the black glossy structure of the logs commonly found in lignites and coals of higher rank. As the rank of the coal becomes higher, the substance of the logs becomes more vitreous and resembles jet or obsidian. It remains to be seen, however, whether in some cases the humic matter (ulmins) was not precipitated to form doppleritic layers corresponding to the British conception of vitrain.

(4) "Vitrain," lenses and bodies of irregular cross-section composed of vitreous jet-like material in which the British investigators can find no structure. Because they fail to find evidences of structure, they regard these as segregations of humic material like dopplerite in the coal bed which in process of time have become more or less altered. American investigators regard vitrain as much the same as clarain, namely as the outcome of logs and branches preserved in the peat and turned to jet-like material by evolution. Specimens of vitrain sent to this country were examined by American technologists. They were confident that they saw plant tissues in the samples and felt that the British authorities also would have seen them had the samples been prepared for study in the same manner.

Output and Value of Lignite from North Dakota Mines in 1923

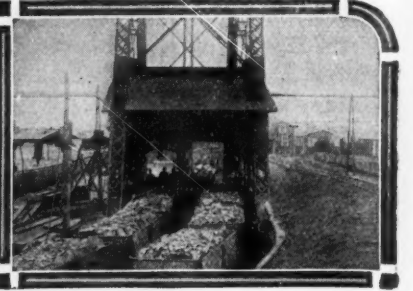
(Compiled by U. S. Geological Survey)

County	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made Into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees				Average Number of Days Worked
								Underground		Surface	Total	
								Miners, a	All Others			
Adams.....	66,253	6,035	3,426	.....	75,714	\$184,000	\$2.43	62	16	16	94	154
Burke.....	217,561	12,289	9,480	.....	239,330	532,000	2.22	14	7	124	145	214
Burleigh.....	221,633	13,191	8,862	.....	243,686	589,000	2.42	174	67	47	288	163
Divide.....	44,586	5,575	.....	.....	50,161	122,000	2.43	28	8	15	51	184
Dunn.....	10,771	3,756	.....	.....	14,527	29,000	1.99	14	3	6	23	184
Grant.....	5,035	5,139	.....	.....	10,174	22,000	2.16	29	6	7	42	126
Hettinger.....	8,699	7,314	200	.....	16,213	35,000	2.16	32	8	9	49	119
McLean.....	85,725	31,779	2,688	.....	120,192	293,000	2.43	75	16	73	164	206
Mercer.....	209,627	2,950	7,580	.....	220,157	534,000	2.43	96	40	93	229	182
Morton.....	35,117	30,517	400	.....	66,034	131,000	1.98	47	13	18	78	184
Mountrail.....	.....	1,722	.....	.....	1,722	3,000	1.74	20	.....	.....	20	170
Stark.....	49,523	17,615	2,523	.....	69,661	168,000	2.41	50	23	20	93	216
Ward.....	37,664	36,585	71	.....	74,320	188,000	2.53	109	16	18	143	193
Williams.....	43,254	38,006	278	.....	81,538	205,000	2.52	81	24	17	122	167
Other counties (b)...	64,424	6,101	3,000	.....	73,525	176,000	2.39	52	10	18	80	236
Total, excluding wagon mines.....	1,099,872	218,574	38,508	.....	1,356,954	\$3,211,000	\$2.37	883	257	481	1,621	182
Wagon mines served by rail.....	28,446	.....	.....	.....	28,446	64,000	2.25	.....	.....	.....	.....	.....
Grand total....	1,128,318	218,574	38,508	.....	1,385,400	\$3,275,000	\$2.36	.....	.....	.....	.....	.....

a Includes also loaders and shotfirers. b Billings, Bowman and Oliver.



News Of the Industry



Appeal to Gov. Pinchot to Prevent General Strike of Hard-Coal Miners; To Call Convention If Men Go Back

The executive board of District 1, United Mine Workers, held a special meeting at Scranton on Sunday, Jan. 18, in an effort to avert an impending general strike in the anthracite field. Among the steps taken was an appeal to Governor Pinchot to intervene.

If the walkout takes place 72,000 men will be idle, as 12,000 are on strike at the Pennsylvania and Hillside Coal & Iron Co. plants at Pittston. It is on this latter strike that the threatened walkout hinges. Both strikes are unauthorized and are opposed by district and national union officials. Many persons believe that Governor Pinchot is the sole hope of averting the new strike, and numerous individual appeals have been sent to him to act.

The general grievance committees, representing about fifty locals, met in Wilkes-Barre Saturday night and gave the district officials three days to settle the Pennsylvania company walkout and to call a special convention of the miners. The grievance committee planned to meet again Wednesday afternoon in Wilkes-Barre, when, it was reported, a general strike order would be issued if the trouble had not been settled.

Lewis Urges Keeping Men at Work

At Sunday's meeting of the board Rinaldo Cappelini, district president, said that members of the commission appointed by John L. Lewis, international president, to investigate the Pennsylvania strike were expected back in Scranton Monday or Tuesday. Immediately on their arrival the district executive board planned to meet in an attempt to avert the threatened strike, he said.

A telegram was read from International President Lewis, in which he urged Cappelini to use every effort to have the men remain at work pending disposition of their grievances. Thomas Kennedy and C. J. Golden, district presidents, issued a statement saying that they would agree to the striking miners' request to call a special meeting of the anthracite board of conciliation, together with the presidents of the three hard coal districts, as soon as operations were resumed by the striking miners of the Pennsylvania company.

At the Wilkes-Barre meeting of the general grievance committee all that prevented a strike being called for Monday, it was said, was the desire to allow the local unions to safeguard

their funds from seizure by district or international officials and to give the locals an opportunity to authorize their delegates to vote for a walk-out.

Action on filing a bill in equity in the Luzerne County courts for an injunction restricting the officials of District 1 from obtaining their salaries as district officers was to be taken at a special meeting of the general grievance committees under the jurisdiction of the district Monday night in Wilkes-Barre.

Failure on the part of district officials to settle the strike of the miners of the Pennsylvania Coal Co., refusal to call a special district convention to consider the alleged grievances of the men and alleged laxity in other matters were given by the committees as the reason for the proposed civil action.

Observe Contract, Says Cappelini

Cappelini, president of District No. 1, issued the following statement Sunday night: "The day has come when our laws and the contracts made must be respected by our membership, and any local union or individual of a local union who does not through some reason comply with the laws of our organization and the contracts made by our organization, cannot be a member of our organization."

"Therefore, as president of District No. 1, and by the authority vested in me, I urge every member to keep inviolate the contracts under which we are working."

Six Men Killed by Blast in Kentucky Mine; Cause Said To Have Been Windy Shot

Six men were killed in an explosion at Diamond Mine No. 1, of Palmer Brothers, Providence, Ky., about 5 p.m. Thursday, Jan. 15. It is believed that the explosion followed a windy shot, as Herman Murphy, a shotfirer, when found was severely burned, his head crushed and body bruised, indicating that he had been close to the explosion and was thrown down violently. Gooch Gardner, who worked with Murphy, also was burned and bruised.

The force of the explosion put the mine fans out of commission for a time and the other four men were dead when reached some hours after the explosion. Goldie Merritt and Hugh Teague, entry

Green Hails Retention of Davis in Cabinet

The announced intention of President Coolidge to retain Secretary of Labor Davis in the Cabinet meets the approval of the American Federation of Labor. In a statement Jan. 14 William Green, newly elected president of the American Federation of Labor, said:

"The appointment of Mr. Davis as Secretary of Labor constitutes a recognition of the excellent service which he has rendered during the past four years. It was naturally expected he would be appointed by President Coolidge, provided, of course, he desired to remain as Secretary of Labor."

"The relationship between Secretary Davis, the Department of Labor and the American Federation of Labor has been of a cordial and satisfactory nature. I am sure the same friendly co-operation and relationship will continue."

men, appeared to have been some distance from the explosion, Teague showing burns about the mouth, however, James Holt and Joseph Troyer, another shotfiring crew, also were found dead.

The explosion occurred almost a mile back in the slope mine, which was started in 1906 and which has been operated with no serious mishaps. Rescue work was slow on account of blown-down props, etc., and fear of black-damp. The rescue car of the Bureau of Mines at Evansville (Ind.) station had been sent to Harrisburg, Ill., and it was necessary to rig up an emergency motor truck, which did not reach Providence until about midnight. The day crew of about 100 men had left the mine, fortunately. Finis Loston, who was on his way to the entrance of the mine with a mule car, reported the explosion, which was light and was not followed by flame shooting from the mouth of the mine. Loston stated that he was knocked down and his lamp put out by the force of the explosion. He was the only man in the mine to come out alive.

Second Explosion Averted

Had not Loston turned in the alarm the accident probably would not have been known until six night men went on duty later in the evening, and these might have encountered gas, thus causing another explosion.

There is no indication of even a momentary fire, and it is believed that it was clearly a case of dust or gas set off by a windy shot.

Expect Appeal from Decision In Assigned-Car Case

Private car owners, the factors responsible for reopening the Interstate Commerce Commission's original order in the assigned car and private car case more than a year ago, are expected to appeal to the Supreme Court from the commission's reaffirmation of the order abolishing the assigned car practice before the effective date of that order, March 1. It also is expected that some of the railroads which opposed this order will join in the action.

An appeal must be predicated upon legal points, as the Supreme Court repeatedly has ruled that administrative acts of the commission cannot be challenged in the courts. The effect of an appeal, if entertained for argument by the Supreme Court, would be to suspend the effective date of the order.

The effect of the order upon the coal-mining industry, the railroads and those industries which own their own coal cars is interpreted variously, according to the point of view. The railroads of the country were not a unit in this case, some roads never having resorted to the assignment of coal cars. The coal operators were not united on this subject. The National Coal Association, as an organization, was opposed to railroad assigned cars but took no official position on private cars.

In periods of sufficient coal car supply, naturally, the effect of the commission's order, when in operation, would be nil, for it is only in periods of a car shortage or, more properly, of a transportation shortage that the order would be felt, as there are sufficient cars at any time to handle the country's coal output if the turn-around is normal.

Storage Movement Expected

One result is expected to be that railroads which have not stored coal heretofore will now make plans for storage and execute them whenever a cloud appears on the horizon. There also is expected to be an increase in the number of contracts between mines and railroads which contain a preferential clause. A clause of this nature now is written into some contracts. It provides, in effect, that the railroad shall get its supply first. Being written into the commercial contracts of the mine also, so that other purchasers understand the situation which would arise if a shortage of output or of shipment arose, it is said that this clause can withstand an "unfair practices" or "discrimination" charge.

For coal purchased under contract the railroads, in the event of insufficient car supply, would of course pay no added price, but for what they were obliged to purchase on the open market they would have to pay the market price. In this respect some roads might face a higher coal bill if a shortage developed. In the final analysis it is not believed that a railroad will suffer severely for lack of coal, regardless of the transportation situation. In the first place, with coal on its tracks, commandeering probably would be resorted to. In the second place, the mine owners would be inclined to favor the railroads by any means possible, on the theory that the roads must have fuel

Engineers' Council Opposes Power Bill

Opposition to a bill pending before Congress proposing that the Federal Power Commission prepare a comprehensive plan of development of the nation's water resources to promote power development and navigation was voted at the opening session of the American Engineering Council, at Washington, D. C., Jan. 16.

The bill, introduced by Senator Ransdell, of Louisiana, was opposed in a committee report adopted by the council as not only impractical in its purposes but as placing a burden on the Power Commission it was not prepared to assume. It also was held to "suggest a strong entering wedge of government ownership and operation."

for transportation before they can transport any fuel.

Assigned cars were abolished during the period of federal control of the railroads, and the arrangement worked well. But it is pointed out that this is not a criterion of what might happen under private management, for then there was one-man control of all transportation facilities and a fixed price of coal.

The advantages of private cars, as a protection in the event of a transportation shortage, would appear to be wiped out under the commission's order.

Large industrial concerns affected by the order and the number of private cars owned by each follow: Bethlehem Steel Corporation, 3,975; Steel Company of Canada and affiliated companies, 400; Carnegie Steel Co. and other subsidiaries of United States Steel Corporation, 5,200; Pittsburgh Plate Glass Co., 269; Ford Motor Co., 800; Youngstown Sheet & Tube Co., 1,334; International Harvester Co., 500; Seaboard By-Product Coke Co., 350; Chicago By-Products Coke Co., 650; Rainey-Wood Coke Co., 400; Donner Union Coke Corporation, 500; Berwind-White Coal Mining Co., 4,078; Westmoreland Coal Co., 2,019; Public Service Electric Co., 600.

Wage Boost Causes Slump in Connellsville Operations

There has been a decided slump in the Connellsville coke region as a seeming result of the recent increase in wages at the independent coke plants and the consequent increase in the price of coke. Some of the plants are laying off a day or two a week and others are putting out ovens. The Hillman Coal & Coke Co. has put out over 100 ovens at the Tower Hill and Griffin plants. The Washington Coal & Coke Co., at Star Junction, has put out 40 ovens, and the American Coke & Fuel Corp., which fired 40 ovens two weeks ago, were putting them out last week. The Etna-Connellsville Coke Co., which resumed operations a few weeks ago after being idle nearly a year, closed down entirely Jan. 1. The company has 119 beehive ovens.

Maynard Coal Properties Sold On Court House Steps

The mines of the defunct Maynard Coal Co. and the stock of its subsidiary, the Superior Coal & Dock Co., in Superior, Wis., were disposed of by public sale from the court house steps in Hazard, Ky., Jan. 10. The three Kentucky mines were bought for \$375,000 by the Daniel Boone Coal Corporation, a holding company organized to represent the bondholders.

This company immediately made an arrangement with the Columbus Mining Co., whose headquarters are in Chicago, Ill., to operate the three Hazard mines and sell the coal. The Columbus Mining Co. has been doing this on a temporary basis since September and two of the mines have earned money for the bondholders. The third has been shut down. All three are now to be developed and equipped for larger tonnages. This will increase the total Hazard field output of the Columbus Mining Co. to approximately 1,000,000 tons a year.

This operating arrangement will continue until such time as the mines can be sold outright for an amount sufficient to cover the bondholders' investment. It is generally held that the business sense and good intentions of the Chicago Trust Co., representing the bondholders, and the sagacity of A. L. Allais, president of the Columbus Mining Co., are jointly responsible for saving the three mines from a sale at ridiculous prices.

The four Ohio mines of the Maynard Coal Co. also were offered for sale but did not bring an acceptable bid. So a co-operative agreement was made with a group of miners to rehabilitate at least one of the four—No. 4 mine—and operate it, paying a fixed royalty per ton to a bondholders' holding company that is now being organized.

The stock of the Superior Coal & Dock Co.—probably worthless in view of the fact that Henry Ford, the lessor, now holds the bonds whose prior claim of \$680,000 on the property plus mechanics' liens of about \$150,000 total more than the dock probably will ever bring at a sale—was bid in on the court house steps for \$5 by the Chicago Trust Co. This transfer of a sheaf of handsomely engraved certificates, numerous enough to paper a room, in exchange for \$5 gave the lookers-on the only amusement of the day.

Thus the Maynard Coal Co. ceases to exist as a corporate entity and the receivers have wound up their job of disposing of the company's holdings.

Nova Scotia Miners Evade Conciliation Parley

Coal miners in the employ of the British Empire Steel Corporation, in Nova Scotia, have refused to appoint a representative to the Board of Conciliation authorized by the federal Department of Labor at the request of the company. James Murdock, Minister of Labor, therefore will appoint a representative of labor on the board in accordance with the act. The union officials state that the miners will hold themselves aloof from the proceedings of the board.

Mass Meeting and Parade Of Miners Widens Breach In Central Pennsylvania

The gulf between the United Mine Workers of District No. 2 and the central Pennsylvania bituminous coal operators is getting wider each day.

A monster mass meeting and parade were held in DuBois on Friday evening, Jan. 16, when miners from all the local unions in the Clearfield district turned out and marched. John Brophy, president of District No. 2, delivered an address in which he emphasized the importance of standing back of the union in its efforts to uphold the wage scale. Samuel Pascoe, representing the International union, who was sent to the meeting by President John L. Lewis, also condemned the action of the operators and business men in their attempt to bring about a settlement.

While the miners are actively engaged in strengthening their ranks, business men throughout the district are organizing the so called "Citizens' Association."

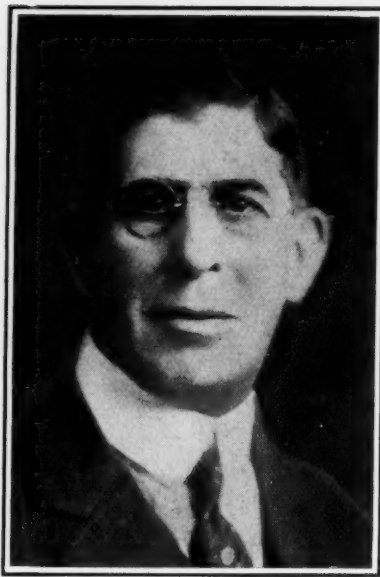
Business has suffered intensely throughout the greater part of the field. Following the lead taken by Punxsutawney, practically all mining towns have selected committees of three to represent them at a meeting in the near future. Businessmen assert that the object of the association will be to secure the co-operation of both the operators and the miners. The union officials, however, have taken a stand against the organization, telling the miners that it is fostered by chambers of commerce and like organizations, in co-operation with the operators, to force a reduction in wages and the annulment of the scale.

Local unions throughout the district are going on record against the association. In a number of mining towns, the miners have gone so far as to declare boycotts against the merchants taking part. What the outcome will be is only a matter of conjecture. No effort has been made to get the various committees together, and the operators, while vitally interested, have nothing to say.

As a consequence the coal situation in central Pennsylvania has resolved itself into what is almost an open fight between the United Mine Workers and the merchants and businessmen of the various mining towns, with the operators looking on, anxiously awaiting an opportunity to open their mines on some basis which would justify them in working their holdings.

Lehigh Valley Coal Co. Buys Dorrance Tract

The Lehigh Valley Coal Co. has just purchased the Dorrance tract, which has been mined on a royalty basis for over 50 years as part of the Dorrance colliery workings of the company. This was one of the largest personally owned tracts of coal mined under lease in the northern anthracite region. Nine or ten separate beds are said to be in the tract. The Dorrance estate heirs received \$1,300,000 for the tract. The property is located on the opposite side of the Susquehanna River from Wilkes-Barre.



E. B. Jermyn

The former owner of the Langcliffe colliery, near Avoca, Pa., which he operated for a little more than a year, has again announced his candidacy for Mayor of Scranton. He was mayor of the city from 1914 to 1917 inclusive.

Monongahela Ry. Acquires Scotts Run Ry.

The Interstate Commerce Commission on Jan. 13 authorized the Monongahela Railway Co. to acquire control of the Scotts Run Railway Co., which owns 23.7 miles of road in West Virginia and the Monongahela & Ohio Ry. in Pennsylvania.

Scotts Run Ry. connects with the Monongahela Ry. at Randall, W. Va., a few miles north of Morgantown, and though short is an important coal carrier. With its Pennsylvania counterpart, it runs from Randall to Braze, Pa., about 15 miles south from Waynesburg.

The Scotts Run RR. is 23.7 miles long and the Monongahela & Ohio 2.5 miles.

This road was planned by J. V. Thompson to tap the coal fields of Greene County south of Waynesburg, and although the Monongahela Ry. officials say they know nothing of a plan to extend the road into Waynesburg, Morgantown business interests are hopeful that such an enterprise will not be long in getting under way.

The Commerce Commission at the same time denied the application of the Morgantown & Wheeling R.R. to construct a 14-mile railroad between Waynesburg and Blacksville, both in Greene County, Pennsylvania.

The commission also refused the road permission to acquire and operate the properties of the Morgantown & Wheeling Ry. and of the Monongahela & Ohio R.R.

The presumption is that the permit was denied because the Morgantown & Wheeling ceased to exist when it became the Scotts Run Ry.

The Morgantown & Wheeling has surveyed a line to Waynesburg from Blacksville and had planned to extend the line from Waynesburg to Wheeling.

Would Merge All Mines in Central Pennsylvania

Speaking before the Pennsylvania Coal Mining Institute in Johnstown Friday night, Jan. 16, Jesse K. Johnston, president of the Ridgeview Coal Co., of Bolivar, recommended a merger of all the coal mines in the central Pennsylvania field. He declared that the merger could either combine the selling organizations of the various concerns or consolidate all the coal producing properties under the management of one corporation. Mr. Johnston favored the latter plan, explaining that he believed it would give better results.

Mr. Johnston declared that coal operators will never get anywhere until they present a solid front in the matter of wage agreements and selling activities, quoting John L. Lewis to the effect that the miners always get the better of the bargain when wage scales are signed because they stick together, while the operators persist in trading one district against another and in other ways divide on vital questions of policy.

Mr. Johnston called attention to the use of modern machinery in non-union fields and cited the H. C. Frick Co., which handles over a million tons of coal annually with a single conveyor, thus reducing expenses enormously. Mr. Johnston declared that "Coal is still king." Water power is not in it, according to government figures, said Mr. Johnston. If every foot of water power in the nation were fully developed, it would amount to but 5 per cent of the total consumption of coal.

Asked about the surplus miners in case of merger, Mr. Johnston declared that "by reason of the more restricted emigration in a year or two, many miners would quit the mines and get remunerative employment in other lines of industry."

Dr. Reinhardt Thiessen, research chemist of the experimental station maintained at Pittsburgh by the U. S. Bureau of Mines, delivered an interesting illustrated lecture on "The Origin and Constitution of Coal."

I.C.C. Denies Public Need for Coal River & Eastern Ry.

Public convenience and necessity do not require the operation in interstate commerce of the Coal River & Eastern Ry. Co., a subsidiary of the Coal River Collieries Co., which company is a project of members of the Brotherhood of Locomotive Engineers, was the decision handed down Jan. 13 by the Interstate Commerce Commission. An outright denial is made of that portion of the line from Ashford to Warren S., W. Va. Respecting that portion of the line extending from Seth to Prenter, W. Va., the proceedings are held open, so that the petitioners and the Chesapeake & Ohio R.R. may attempt an amicable settlement. The Coal River & Eastern Ry. serves the mines operated by the locomotive engineers, which are headed by Warren S. Stone. Commissioner Potter dissented and expressed the view that inasmuch as the petitioners have made a large investment they are entitled to a certificate.

Dock Operators Have Better of Argument On Price-Fixing Charge

Hearing Before Federal Trade Commission Reveals Unsettled Conditions Following Strike of 1919—Oversupply of Distributing Units Admitted—Docks Insure Reasonable Prices to Northwest

BY PAUL WOOTON
Washington Correspondent of Coal Age

Little of a substantial or impressive character was presented at the oral argument before the Federal Trade Commission to justify the charges that the Northwest Dock Operators' Association has conspired to fix prices of coal and to drive retail dealers in Minneapolis and St. Paul out of business. The general impression is that the dock operators had decidedly the better of the argument before the Federal Trade Commission.

The controversy is an interesting one both because of the story it tells of the unsettled and troublous time of the last few years and from the point of view of the conflict between two methods of distribution. The trouble arose from conditions growing out of the strike of 1919, the shortage of the following year, and the business depression of 1921, with their well-known effects on price and on distribution. The Twin City retailers stand for distribution from producer to wholesaler, to retailer, to consumer. The dock association is illustrative of a different system of distribution, under which the producer also assumes the rôle of wholesaler and to a certain extent of the retailer of coal.

Retailers Found Inefficient

One of the admitted difficulties with coal is the fact that there are too many producing, wholesaling and retailing units. The records of the Harding Coal Commission will show that the retailer's margin is greater than the mine price of the coal. They will also show that the unskilled laborer who delivers the coal, puts it in the cellar, receives more than the man who mined it. The Fuel Administration found that there were 38,000 retailers conducting operations in a more or less inefficient manner.

The Northwest Dock Association compares with the mail-order house. It covers a wide territory with its wholesaling and retailing functions. The complaint of the Twin City retailers is comparable to the complaint of the small country merchant who objects to the loss of business to Sears-Roebuck and Montgomery-Ward. In the Northwest, as elsewhere, the consumer is not as greatly concerned as to who is handling the business as he is with prices and service.

The Federal Trade Commission, after having listened to George W. Morgan, who presented the argument for the dock operators, can be in no doubt as to the indispensable service which the dock system performs for the people of the Northwest. It was contended that were it not for the competition the docks offer the Northwest would have to pay much higher prices for its all-coal. One effect would be to put the coal business under the control of independent dealers.

The Northwest is a thousand miles distant from the good coal of the Appalachians and fifteen hundred miles away from anthracite. This constitutes the longest haul of any considerable amount of coal, involving rail movement, in the world. There are, of course, longer movements of seaborne coal, but that trade is of a different character. The great commercial organization which has worked out the plan of giving the Northwest the economies of water-borne transportation through the Great Lakes is held to be responsible for the industrial prosperity of the Northwest in providing cheap coal and in preventing fuel prices generally from being unbearably high. It was proved that the dock companies are strong and active and are giving good service.

Steam Trade a Minor Factor

A part of the complaint arises out of the very minor portion of coal intended for steam purposes which the dock companies deliver through their own yards. Steam coal in less than carload quantities is a small fraction of the whole business. It affects nothing outside of the Twin Cities, the only inland points where steam sizes are used extensively. Of course the dock companies do sell at retail in Duluth and other ports. At all other points the retail trade is handled by other merchants.

The dock companies were led to operate retail yards in the Twin Cities as the very nature of the rail-lake-rail haul led to much breakage. They naturally turned to the metropolitan center for an outlet for their fines. The problem is much like that of anthracite operators in disposing of their steam sizes. As in that case the Northwestern companies have had to assume most of the burden of disposing of their screenings, and practically were driven into the retail business in the Twin Cities for that purpose. Having gone in they saw no reason for giving up a part of the business to the local retailer.

It is admitted that this would constitute unreasonable treatment of the retailers were the dock operators the only source from which they could get coal. The record shows, however, that Illinois and Indiana coal has been going into the Northwest in increased volume and has been available to the retailers in as large quantities as they cared to handle. In fact the retailers have a very necessary function to perform in marketing the coal originating in Illinois and Indiana and the mine operators in that region have been glad that this facility was there.

It is regarded as very unlikely that anything will develop from the Federal Trade complaint which will alter in any way the existing situation in the



J. W. White

The newly-elected president of the Engineers' Society of Northeastern Pennsylvania, J. W. White, of Scranton, Pa., received a unanimous vote for the office. He has been active in the affairs of the organization for years. He is a graduate of Pennsylvania State College, class of '98, electrical engineering.

retailing of coal in the Twin Cities. St. Paul and Minneapolis retailers, it is believed, may as well realize that the public demand for their services is practically confined to the merchandising of Middle West coal and that they have no claim on the distribution business of the dock companies, whose arrangements for the distribution of coal in the Twin Cities seems to have been established as the effective as well as the legitimate way to handle that part of the Northwest's coal supply.

J. W. White Named to Head Engineers' Society

J. W. White was elected president of the Engineers' Society of Northeastern Pennsylvania at the annual meeting held in Scranton on Thursday night, Jan. 15. He succeeds S. D. Dimmick, vice-president and general manager of the Glen Alden Coal Co., as president of the society.

Mr. White is a graduate of Pennsylvania State College, electrical engineering course. For the past seventeen years he has been affiliated with the Jeffrey Mfg. Co. and has been located in various parts of the country as representative of that company. Mr. White was for several years located in Pittsburgh, Chicago, and other cities adjacent to the soft-coal fields, but in recent years he has been sales manager in the anthracite region and is familiar with the needs of the industry here.

Other officers elected at the society's annual meeting are R. H. Buchanan, of the Hudson Coal Co., vice-president; G. L. Bascome, of the Maccar Truck Co., secretary; William G. Metzger, of the Hudson Coal Co., treasurer; Boyd Musser, of the Anthracite Bridge Co.; F. L. Smith, Smith & Howley Electrical Co.; P. G. Rimmer, Ridgeway Dynamo & Engine Co., and P. J. Murphy, Laurel Line R.R., directors.

Hoover Lauds Budget Work Of General Lord

Commerce Secretary Hoover after listening to an appeal for less government spending, voiced by General Lord, Director of the Budget, at the annual dinner of the American Engineering Council, put forward the idea that some of the federal government's spending is in the public interest. He pointed out that the reproductive services of the government are adding to the national wealth and make available for taxation hundreds of millions of dollars. He cited as an example his estimate that the expenditure by the Department of Commerce of \$100,000 in efforts to eliminate waste in industry had resulted in the saving of \$600,000,000.

Content with putting this thought before General Lord and the American Engineering Council, Secretary Hoover brought out forcefully the great good which General Lord is accomplishing and suggested there should be forty-nine of him, so that each state, in addition, could have a General Lord to supervise its budget.

In expressing the hope that the American Engineering Council may carry on and gain in strength, Secretary Hoover expressed the wish that the reorganization of the council "will make it possible for some of our engineering brethren to come more amiably into line." "It may be," he continued, "we will have to wait for the death of some of the older members of some of the societies, but we can live in hope, and in the meantime we must keep the council alive. If the institution can produce, not once in five years, but once in fifty years, the beginning of a great national conception in the change of our economic system, such as was produced in five years [the Elimination of Waste Report] it will warrant its existence and all of the labor devoted to it."

Kansas Revives Interest in First-Aid Work

A permanent first-aid and mine-rescue organization for Kansas was developed Jan. 12, in Pittsburg, at a meeting attended by Leon Besson, state mine inspector; W. D. Ryan, field agent of the federal Bureau of Mines, and operators and miners. Joseph Fletcher, of Pittsburg, was elected chairman, and Harry Burr, also of Pittsburg, secretary. Owing to the small attendance of miners no decision was made on the proposal to hold a meet in the spring, but another meeting was arranged for Jan. 21, when it was expected that arrangements for the meet would be made and the organization perfected.

Preliminary to a meet, classes in mine-rescue and first-aid work will be organized. No such classes have been held in Kansas for many months, due, operators declared, to lack of interest among miners, some of whom demanded pay for the time required. Ryan suggested as a possible incentive the proposal for a national meet in Washington, for representation in which state teams could compete.

Less than 10 per cent of the miners in the United States have received first

China Press Urges Export Of Coal to America

The China press is advocating the export of Chinese bituminous coal to the Pacific Coast of the United States. The papers assert that American ships can carry Chinese coal costing \$3.25 per ton as return cargo for \$3.25 freight charges which would give \$1 per ton on the product, as the American product averages \$8 per ton. It is estimated 500,000 tons of coal could be shipped to the Pacific Coast from China annually. The quality of the Chinese coal is said to compare favorably with that used on the Pacific Coast. It is said that steamship companies during dull seasons might find it profitable to ship coal from China to Seattle or Portland.

aid and mine-rescue training, Mr. Ryan said, and yet, he added, 75 per cent of mine accidents, which, in addition to endangering the lives of the men, cut mine production one-tenth, are preventable.

Rock dusting was one of the subjects most exhaustively considered in a round-table discussion of mine safety.

Accuses Bryan of Profiting In Coal Sales

Former Republican state officials of Nebraska fired another blast at former Governor Bryan Jan. 14 but failed to create much of a sensation in the State Legislature. Both the House and Senate accepted as a petition, but took no action on a message from George E. Johnson, former State Engineer, challenging the truth of Mr. Bryan's charges of irregularities in the Road Department more than two years, and in turn accusing the former executive of improprieties before and during his tenure of office.

Mr. Johnson's communication was a reply to certain statements in the former Governor's farewell message.

Former Governor Bryan, informed of Mr. Johnson's attack on him, characterized as "unfounded" the charges that Mr. Bryan violated the State Corrupt Practices act during his Gubernatorial campaign and personally profited by "a great many thousands of dollars" in selling coal to consumers through state operation of a private coal concern.

Of the 1,531 coal mining companies making income tax returns for 1922, 652 paid cash dividends aggregating \$53,549,077; 397 companies reported net book profits of \$24,508,673, but did not pay cash dividends; 10 companies reported a book loss but paid cash dividends totalling \$1,929,192. The returns from 1,049 companies engaged in coal mining show that they had surplus and undivided profits at the close of 1922 aggregating \$378,639,999. Their net book profit for the year was given as \$105,636,235. The total net taxable income of the 1,531 companies making returns was \$138,848,063.

Stream-Pollution Decision Against Mines Stands

In refusing to grant a writ certiorari by which the Sagamore Co. and twenty-five other coal mining corporations and partnerships sought a review of a decision of the Supreme Court of Pennsylvania in favor of the Mountain Valley Water Supply Co. and others, the U. S. Supreme Court Jan. 19 permitted the order of the Pennsylvania court to become operative.

The case involved the discharge of mine water into Ingham Creek, a non-navigable Pennsylvania stream, above the dam of the water company, which is a subsidiary of the Pennsylvania R.

Alleging that the flow of mine drainage into the stream polluted the water and rendered it unfit for industrial and domestic use, the water supply company and two affiliated corporations using the water for the railroad one case and distributing it to several small municipalities in the other, sought for a restraining injunction against twenty-six bituminous coal mine companies in Fayette and Westmoreland counties, Pennsylvania. The state trial court held for the mine companies and dismissed the injunction bill. On appeal, the state Supreme Court reversed this decree, ordered the bill reinstated and the injunction issued. From there the coal companies sought appeal to the U. S. Supreme Court, which saw legal reason for granting the writ.

The effect of the final decision of the state Supreme Court, the coal companies contended, would be to close their mines, as they asserted there was no means of disposing of the mine water other than by natural drainage into the creek.

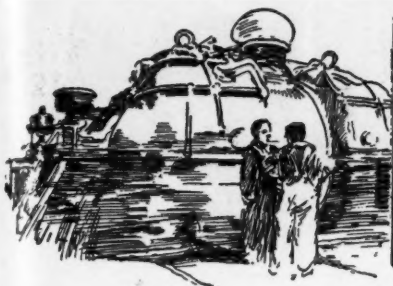
Roads Order More Equipment

New equipment orders totaling more than \$3,000,000 were announced by railroads last week. The largest was that of the New York Central R. for 1,000 gondola cars, 500 from the American Car & Foundry Co. and 500 from the Pullman Co.

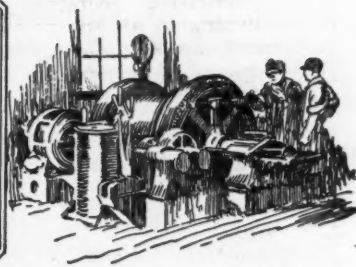
Orders have been placed by the Missouri Pacific R.R. for 1,000 steel coal cars and thirty all-steel passenger coaches, which, with other large equipment orders recently placed, makes the total expenditure by the Missouri Pacific for equipment in the last three days approximate \$12,000,000.

In addition to the \$15,000,000 general maintenance program of the Minneapolis, St. Paul & Sault Ste. Marie Ry. for 1925, announcement was made last week that the company plans to spend \$2,500,000 for additions and betterments. About \$600,000 will be for freight equipment.

Coal to the extent of 283,055 tons was used in connection with the manufacture of structural and ornamental ironwork during 1923, according to the Bureau of the Census. Similar figures covering other industries are as follows: Artificial stone products, not including paving or roofing, 46,872 tons; springs, 43,030 tons; dental goods, 9,126 tons; stoves and hot-air furnaces, 174,915 tons; mirrors, 17,617 tons; copper, smelting and refining, 1,116 tons, and salt, 910,517 tons.



Practical Pointers For Electrical And Mechanical Men



Device Prevented Pump Running When Mining Machine Was Working

WHETHER a coal company generates its own electrical energy or purchases it, methods whereby peak demands may be reduced are always interesting. A simple device, which was used several years ago to relieve a small temporary power plant of high peak loads furnishes an idea which might be

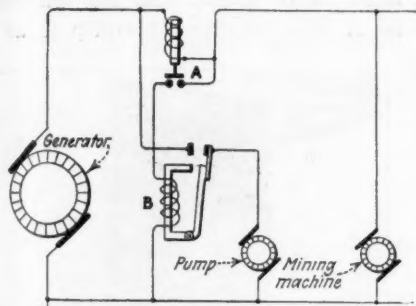
breaker would not stay closed, in which case the pump could not be started. The pump was started by hand but was shut down automatically whenever the mining machine began to operate.

This idea could possibly be developed further to effect a reduction in power-demand charge by automatically working pumps on the off-peak period. This of course would necessitate the use of automatic starters on the pump motors, and also the use of some sort of time delay relay for preventing the starting of the pumps in case of a short interruption of the other mine loads such as might be caused by the temporary opening of a feeder breaker.

C. E. ROGERS,

Electrical Engineer.

Hutchinson-Island Creek Coal Corp.,
Logan, W. Va.



Pump Operates Only When Mining Machine Is Idle

If the mining machine starts while the pump is in operation the series relay A opens the circuit through the holding coil of the breaker, thus stopping the pump.

developed to advantage for decreasing load demands at larger plants.

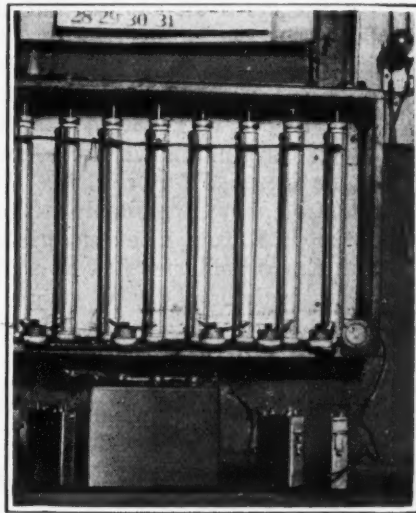
The above-mentioned device was used at the Rossmore mine of the Logan Mining Co., at Rossmore, W. Va. At that time only a small temporary power plant was available to operate a mining machine and a 25-hp. centrifugal pump. The plant was not large enough to operate both pieces of equipment at the same time, and it was desired that preference be given to the mining machine. The desired distribution of the load was accomplished by installing in the mining-machine feeder line a series relay which, whenever the mining machine was taking current, would open a breaker in the pump circuit.

The pump was located near a point where a man was stationed for other duties. This man would start the pump when necessary, provided, however, the mining machine was not also in operation. If the machine was being operated, the pump

small wooden wedges until the cement hardens. When the work must be done quickly, ordinary baking soda may be added to the cement to cause it to set within a few hours.

Resistance Tubes Used Instead of Lamps

A low-voltage direct-current circuit suitable for supplying from 1 to 10 amp. is often desirable in the mine repair shop. The accompany-



Lasts Longer and Costs Less

Excepting the one lamp seen in the upper right-hand corner, this resistance bank has replaced the old outfit of approximately thirty-two lamps which were used for testing and charging purposes.

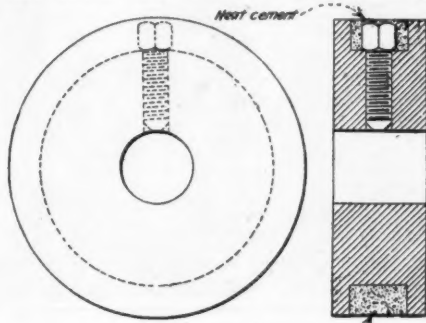
ing illustration, shows how in a Logan County, W. Va., mine shop the time-honored lamp bank has been replaced by a more economical form of resistance.

This voltage-reducing outfit consists of eight 275-ohm, 350-watt, resistance tubes, mounted on the wall above the work bench. The tubes are connected in parallel and are controlled by five snapswitches. The resistance bank is connected to the 275-volt mine circuit and is in series with a pair of testing, or charging, leads. Each tube supplies about 1 amp. and its resistance and heating capacity are such that no harm is done in case the test leads are connected directly together.

A two-dollar ammeter, of the type

Protecting Shaft Collars And Flanges

The illustration shows an ingenious method of safeguarding shaft collars and exposed flanges by filling the space between the flanges of the collars with neat cement. So as to make the cement flow neatly it is mixed with water to the consistency of putty, and the mixture is applied and smoothed to suit the surface of the metal. If necessary a thin sheet formed in the shape of a cylinder may be placed over the set screw and held in position by



Cement Blocks Collar in Place

By pouring cement in position as shown, the collar is safely locked in place.

used on an automobile, can be seen at the lower right-hand corner of the resistance bank. This meter indicates the current flowing when the equipment is tested or when a battery is being charged. The porcelain cut-out switch, mounted on the wall, has a lamp screwed into one of the fuse receptacles. For certain purposes a test lamp has the advantage of indicating that a current is flowing. In this shop the resistance tubes have replaced all but one of the many lamps formerly used.

Extra Motor Utilized To Drive Tire Lathe

Machine tools are still usually actuated by group drive in mine repair shops of small to medium size. Individual motor drives are always preferred from the standpoint of operation and in most cases prove the more economical, but the higher first cost limits the number of such installations.

With the few tools available in a small shop it is generally difficult to apply an individual drive to a machine intended for belt drive. The illustration shows the simple method, used by E. L. Tate, chief electrician, Logan Eagle Collieries Co., of applying an individual motor drive to the tire lathe which is used in the company's shop at Macbeth, W. Va.

In this shop, which was built about three years ago, the tire lathe is located on the opposite side of the room from the short line shaft driving the other tools. In order to drive the lathe from the line shaft it would have been necessary to

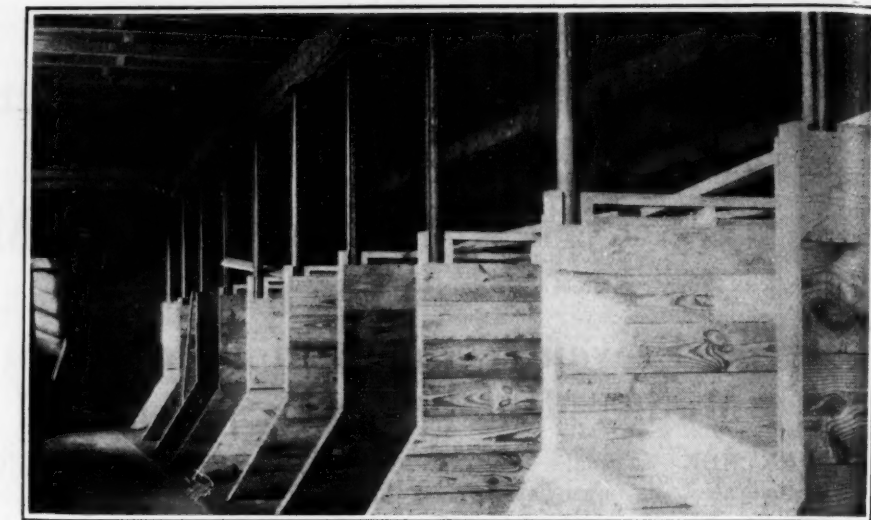


Fig. 1—Boiler Flues Used As Stall Posts

When the Isabella mine was electrified, the well-constructed stone boiler house was remodeled into a neat and substantial barn. The four 300-hp. boilers were scrapped but the flues were saved and used to advantage in the stall and manger construction. The ceiling, which forms the floor of the hay loft, is supported by posts made of flues.

stiffen the roof structure for the support of a countershaft, and a rather long belt from the line shaft to the countershaft would have had to be used. Instead of adopting this arrangement, Mr. Tate installed an extra motor, mounting it directly above the lathe and using a silent chain drive.

The motor shaft is extended by a solid coupling held in place by keys and hollow-set screws. Next to the motor sprocket can be seen the simple outboard bearing.

Made Full Use of Discarded Power-Plant Equipment

Near Brownsville, Pa., the Hillman Coal & Coke Co. has a mine known as Isabella, where power, till a year ago, used to be generated in four

boilers of 300 hp. When the mine began to purchase its power this building no longer had any purpose, so it was decided to equip it as a

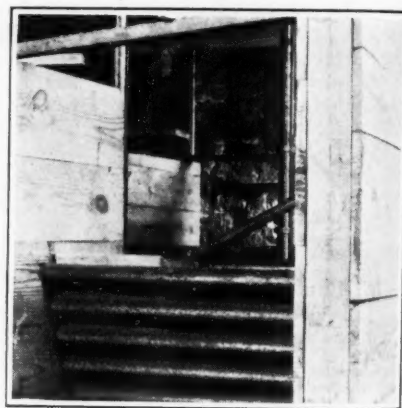


Fig. 2—Mangers Made of Flues

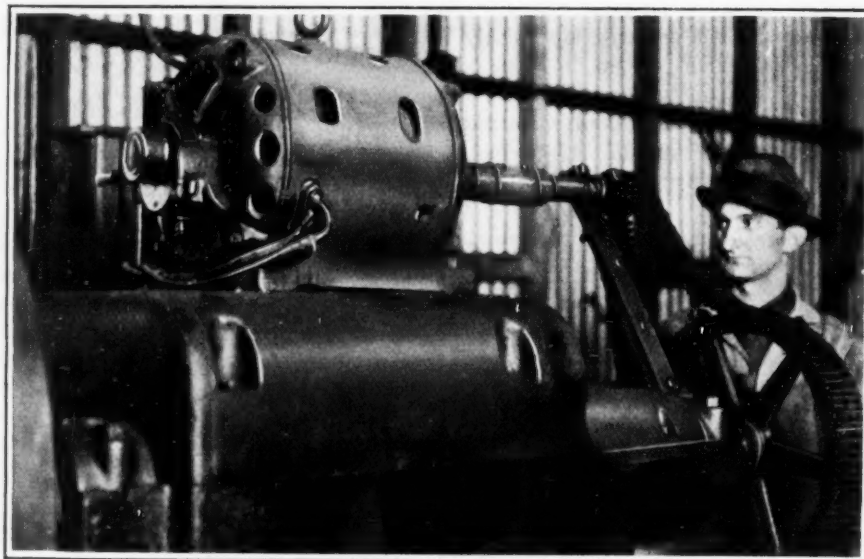
Both sides of the mangers are constructed of boiler flues, these being spaced about 1½ in. apart. The use of flues for posts and for manger construction gives the barn a neat and unusual appearance.

horse stable and in doing so the flues of the boilers were used for stall posts and manger construction.

A row of stalls lines each side of the room with a wide feed alley between. Both the vertical alley-side and the sloped stall side of the mangers are formed of flues laid horizontally as shown in Fig. 2.

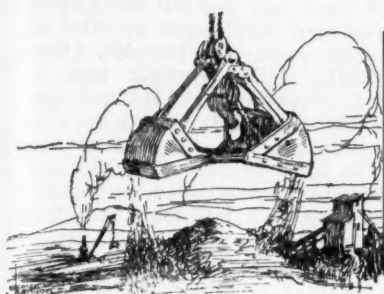
A well-supported ceiling was constructed about 10 ft. from the floor, thus forming a large loft for the storage of hay and feed. This barn with its concrete floor presents a neat appearance.

The Isabella mine was electrified, with purchased power, over a year ago. All steam-driven machines, including hoists and pumps, were replaced by new motor-driven equipment; and a substation built for a motor-generator set.

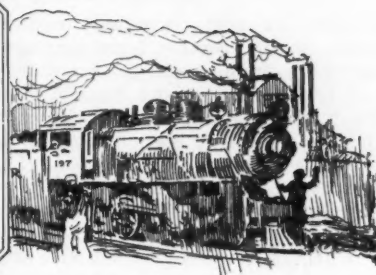


Chain and Sprockets the Only Special Parts Purchased

An extra motor was applied to this tire lathe in order to avoid the necessity of mounting a countershaft and using a long belt. Individual drives are always much more satisfactory than line-shaft belt drives. Note the motor-shaft extension and the small outboard bearing.



Production And the Market



Heavy Production and "Softer" Weather Have Minor Effect on Soft-Coal Market

In the face of a tendency to softness in the weather accompanied by a volume of output that a week ago came within 800,000 tons of the highest on record the soft-coal market is holding up remarkably well. The trade in the Middle West is managing to maintain circular prices with considerable success, and though there is a tendency toward weakness in steam quotations, the larger producers are confident that they will be able to dispose of their surpluses without making sacrifices. Meantime they are wishing hard for more rough weather. Conditions are somewhat similar in Kentucky. Business in the Northwest is only fair, a slight downward readjustment of prices having taken place during the past week. Activity in the Southwest continues brisk, the mines still being from ten days to two weeks behind on deliveries. Fair to overcast describes conditions in Ohio, Cincinnati holding its own pretty well, Cleveland noting a pessimistic tone while at Columbus distress coal has caused a weakening tendency.

Prospects for better business at Pittsburgh have not been realized, though there has been a slight increase in operation. A firmer tone is discernible in New England, the improvement being limited thus far, however, to smokeless coals via Hampton Roads. In Atlantic coast markets little change is noticeable at New York, but Philadelphia continues to report improvement with increased inquiry, many repeat orders and a general pickup in industrial conditions. While the Baltimore market notes an increase in inquiries and orders, the new year has been a disappointment thus far, though certain lines of industry are not without favorable augury. Consumers are quite active in the Birmingham market, but dealers, bent on cleaning up, are holding back to such an extent that distress coal is again beginning to clutter up tracks, causing car shortage.

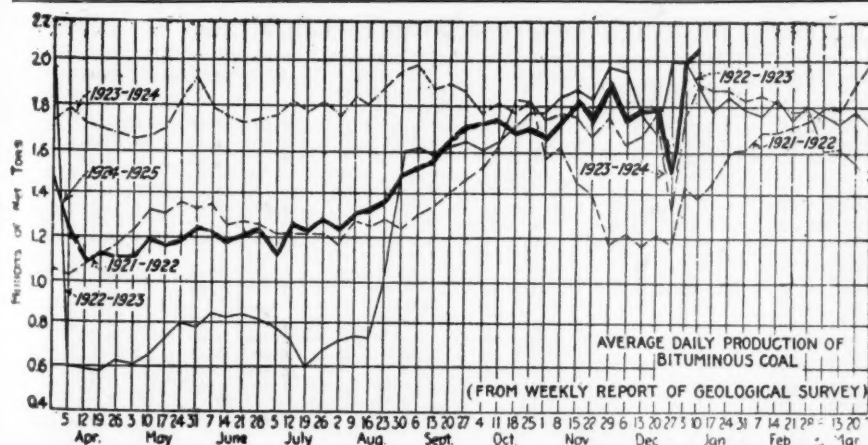
Though the descent of real wintry weather was not immediately reflected to any marked degree in the hard-coal trade, its effects are now in evidence, as demand has picked up for practically all sizes. The call continues to be principally for chestnut, stove sticking closely to its heels. Even egg and pea, which have been sluggish for some time, have improved, but they are still below normal. The steam sizes also are stronger, though it is reported that a small tonnage of company output is going to storage piles. The continuance of the strike in the northern anthracite field has strengthened independent prices, some of which show a slight advance over the levels of a week ago.

Coal Age Index of spot prices of bituminous coal receded slightly during the last week, standing on Jan. 19 at 174, the corresponding price for which is \$2.11, compared with 175 and \$2.12 respectively on Jan. 12.

There was a further pronounced gain in activity at Hampton Roads, dumpings of coal for all accounts during the week ended Jan. 15 totaling 421,087 net tons, compared with 360,241 tons dumped during the preceding week.

Output Nears Record Figures

Production of bituminous coal during the week ended Jan. 10, according to the Geological Survey, was the largest in any week since December, 1920. The total output is estimated at 12,555,000 net tons, an increase of 1,750,000 tons over the previous week and within 800,000 tons of the highest output on record, obtained in the week ended Oct. 25, 1919. Anthracite production during the week ended Jan. 10 aggregated 1,785,000 net tons, compared with 1,255,000 tons in the preceding week and 1,840,000 tons in the corresponding week of 1924.



Estimates of Production

(Net Tons)

BITUMINOUS

	1923-1924	1924-1925
Dec. 27.....	6,944,000	7,638,000
Jan. 3 (a).....	9,368,000	10,805,000
Jan. 10 (b).....	12,337,000	12,555,000
Daily average.....	2,056,000	2,092,000
Cal. yr. to date.....	438,393,000	359,591,000
Daily av. to date.....	1,842,000	1,507,000

ANTHRACITE

Dec. 27.....	1,196,000	1,029,000
Jan. 3.....	1,436,000	1,255,000
Jan. 10.....	1,840,000	1,785,000
Cal yr. to date.....	70,843,000	68,701,000

COKE

Jan. 3 (a).....	236,000	257,000
Jan. 10 (b).....	258,000	266,000
Cal yr. to date (c).....	375,000	395,000

(a) Revised since last report. (b) Subject to revision. (c) Minus one day's production to equalize number of days in the two years.

Midwest Hangs On

In spite of some weather inclining toward "softness" Midwest coal marketers have managed to maintain circular prices with some success. Southern Illinois lump, standard of the region, sticks closely to its cold weather price of \$3.75 and Indiana Fourth Vein lump at \$3.50. Little good stuff moves at less. Demand for egg and the larger nut sizes from some fields is fair. Steam coal has accumulated somewhat under the long run of good domestic business. The tendency is to weaken steam prices but the larger producers are holding their surpluses, confident that they will not have to sacrifice. Much less Eastern non-union coal has been coming into the Midwest region lately, probably because of good markets nearer home, but the price differentials are wide and the Midwest is praying for another burst of cold, rough weather for the whole nation.

In the southern territory served by Illinois the independents with prices 25c. or so under Franklin County circulars are getting a good deal of the business and these report dissatisfaction among some dealers over the slight increase in price which standard shippers have been able to get during January. In such cases coal from western Kentucky and strip-mine coal from parts of Illinois and Kentucky find a market.

Mines generally in Franklin County are working pretty near full time and car supply continues good. In the Duquoin field working time is four and five days a week.

Steam sizes move freely and lump, egg and nut are finding a ready market. There have been no changes in price in any of these fields since last week. In the Mt. Olive field all coal is moving fairly well. Working time is about four days a week and, except on the Wabash, car supply continues good. In the Standard field there still continues little hope for anything good. Screenings are down to \$1.25 again and 2-in. lump is down to \$2.25 and 6-in. to \$2.50, with steam egg at \$2 and steam nut about \$1.75. Mines are working fairly well but there are "no bills" of all sizes frequently on hand.

St. Louis domestic coal business is fairly good. The weather is seasonable and there is something moving all the time. Some of the larger sizes of anthracite are selling but nothing is being received by dealers. A little smokeless and a good volume of coke are moving. Country domestic is fairly active, principally for middle grade coal. There seems to be generally a buyer strike against Franklin County high-priced coal on the part of several dealers. Local wagonload steam is good and carload is active, the demand being about equal to the supply. Country steam is fairly good in spots.

Kentucky Increases Output

Conditions in the coal fields of Kentucky have shown a slight production improvement over the week, while prices of larger prepared sizes are holding quite well. But there

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern		Market Quoted	Jan. 21 1924	Jan. 5 1925	Jan. 12 1925	Jan. 19 1925†
Smokeless lump.....	Columbus.....		\$3.35	\$3.85	\$3.85	\$3.75@ \$4.00
Smokeless mine run.....	Columbus.....		2.10	1.90	1.90	1.75@ 2.10
Smokeless screenings.....	Columbus.....		1.50	1.10	1.20	1.10@ 1.30
Smokeless lump.....	Chicago.....		3.25	3.75	4.00	4.00
Smokeless mine run.....	Chicago.....		2.25	1.85	2.00	2.00
Smokeless lump.....	Cincinnati.....		3.25	4.10	4.10	4.00@ 4.25
Smokeless mine run.....	Cincinnati.....		2.10	2.10	2.10	2.00
Smokeless screenings.....	Cincinnati.....		1.20	1.15	1.10	.75@ 1.25
*Smokeless mine run.....	Boston.....		4.70	4.10	4.20	4.20@ 4.40
Clearfield mine run.....	Boston.....		1.85	1.95	2.00	1.75@ 2.20
Cambria mine run.....	Boston.....		2.55	2.20	2.30	2.10@ 2.50
Somerset mine run.....	Boston.....		2.10	2.05	2.10	1.90@ 2.35
Pool 1 (Navy Standard).....	New York.....		3.00	2.80	2.75	2.50@ 3.00
Pool 1 (Navy Standard).....	Philadelphia.....		3.00	2.75	2.80	2.65@ 3.00
Pool 1 (Navy Standard).....	Baltimore.....			2.25	2.25	2.10@ 2.40
Pool 9 (Super. Low Vol.).....	New York.....		2.25	2.05	2.10	2.00@ 2.35
Pool 9 (Super. Low Vol.).....	Philadelphia.....		2.30	2.15	2.20	2.05@ 2.40
Pool 9 (Super. Low Vol.).....	Baltimore.....		1.85	1.75	1.85	1.75@ 2.00
Pool 10 (H.Gr. Low Vol.).....	New York.....		1.95	1.85	1.85	1.75@ 2.00
Pool 10 (H.Gr. Low Vol.).....	Philadelphia.....		1.85	1.80	1.85	1.70@ 2.00
Pool 10 (H.Gr. Low Vol.).....	Baltimore.....		1.80	1.60	1.70	1.65@ 1.75
Pool 11 (Low Vol.).....	New York.....		1.60	1.60	1.60	1.50@ 1.75
Pool 11 (Low Vol.).....	Philadelphia.....		1.65	1.55	1.65	1.60@ 1.70
Pool 11 (Low Vol.).....	Baltimore.....		1.65	1.45	1.50	1.45@ 1.60
High-Volatile, Eastern		Market Quoted	Jan. 21 1924	Jan. 5 1925	Jan. 12 1925	Jan. 19 1925†
Pool 54-64 (Gas and St.).....	New York.....		1.65	1.50	1.50	1.40@ 1.65
Pool 54-64 (Gas and St.).....	Philadelphia.....		1.70	1.50	1.50	1.45@ 1.60
Pool 54-64 (Gas and St.).....	Baltimore.....		1.50	1.55	1.65	1.60@ 1.75
Pittsburgh so'd gas.....	Pittsburgh.....		2.40	2.40	2.40	2.30@ 2.40
Pittsburgh gas mine run.....	Pittsburgh.....		2.30	2.10	2.10	2.00@ 2.25
Pittsburgh mine run (St.).....	Pittsburgh.....		2.00	1.85	1.85	1.90@ 2.00
Pittsburgh slack (Gas).....	Pittsburgh.....		1.60	1.30	1.60	1.50
Kanawha lump.....	Columbus.....		2.60	2.30	2.50	2.25@ 2.75
Kanawha mine run.....	Columbus.....		1.60	1.55	1.60	1.50@ 1.70
Kanawha screenings.....	Columbus.....		1.35	.95	1.00	.90@ 1.10
W. Va. lump.....	Cincinnati.....		2.85	2.25	2.30	2.25@ 2.75
W. Va. gas mine run.....	Cincinnati.....		1.60	1.45	1.30	1.10@ 1.50
W. Va. steam mine run.....	Cincinnati.....		1.60	1.35	1.30	1.10@ 1.50
W. Va. screenings.....	Cincinnati.....		1.10	.85	.80	.75@ 1.10
Hooking lump.....	Columbus.....		2.75	2.50	2.50	2.35@ 2.65
Hooking mine run.....	Columbus.....		1.85	1.60	1.60	1.50@ 1.75
Hooking screenings.....	Columbus.....		1.40	1.05	1.15	1.10@ 1.25
Pitts. No. 8 lump.....	Cleveland.....		2.55	2.40	2.40	2.00@ 2.85
Pitts. No. 8 mine run.....	Cleveland.....		1.90	1.85	1.85	1.85@ 1.90
Pitts. No. 8 screenings.....	Cleveland.....		1.60	1.50	1.45	1.35@ 1.45
Midwest		Market Quoted	Jan. 21 1924	Jan. 5 1925	Jan. 12 1925	Jan. 19 1925†
Franklin, Ill. lump.....	Chicago.....		\$3.50	\$3.35	\$3.60	\$3.50@ \$3.75
Franklin, Ill. mine run.....	Chicago.....		2.35	2.35	2.35	2.25@ 2.50
Franklin, Ill. screenings.....	Chicago.....		1.95	1.95	1.95	1.90@ 2.00
Central, Ill. lump.....	Chicago.....		3.10	3.10	3.10	3.00@ 3.25
Central, Ill. mine run.....	Chicago.....		2.10	2.20	2.20	2.15@ 2.25
Central, Ill. screenings.....	Chicago.....		1.55	1.95	1.95	1.90@ 2.00
Ind. 4th Vein lump.....	Chicago.....		3.10	3.35	3.50	3.50
Ind. 4th Vein mine run.....	Chicago.....		2.60	2.35	2.35	2.25@ 2.50
Ind. 4th Vein screenings.....	Chicago.....		1.85	1.85	1.85	1.80@ 1.90
Ind. 5th Vein lump.....	Chicago.....		2.60	3.00	3.00	3.00
Ind. 5th Vein mine run.....	Chicago.....		2.10	2.10	2.10	2.00@ 2.25
Ind. 5th Vein screenings.....	Chicago.....		1.55	1.70	1.70	1.65@ 1.80
Mt. Olive lump.....	St. Louis.....		3.10	3.00	3.00	3.00
Mt. Olive mine run.....	St. Louis.....		2.50	2.35	2.35	2.25@ 2.50
Mt. Olive screenings.....	St. Louis.....		1.55	1.80	1.80	1.75@ 1.90
Standard lump.....	St. Louis.....		2.90	2.85	2.55	2.40@ 2.60
Standard mine run.....	St. Louis.....		1.95	1.95	1.95	1.90@ 2.00
Standard screenings.....	St. Louis.....		1.10	1.55	1.30	1.15@ 1.25
West Ky. lump.....	Louisville.....		2.85	2.60	2.60	2.50@ 2.75
West Ky. mine run.....	Louisville.....		1.65	1.55	1.55	1.55@ 1.75
West Ky. screenings.....	Louisville.....		1.40	1.10	1.25	1.00@ 1.25
West Ky. lump.....	Chicago.....		2.85	2.60	2.60	2.50@ 2.75
West Ky. mine run.....	Chicago.....		1.75	1.50	1.50	1.40@ 1.65
South and Southwest		Market Quoted	Jan. 21 1924	Jan. 5 1925	Jan. 12 1925	Jan. 19 1925†
Big Seam lump.....	Birmingham.....		3.85	2.85	2.85	2.25@ 2.75
Big Seam mine run.....	Birmingham.....		1.80	1.70	1.70	1.25@ 1.75
Big Seam (washed).....	Birmingham.....		2.10	1.85	1.85	1.50@ 1.75
S. E. Ky. lump.....	Chicago.....		3.00	2.50	2.50	2.50@ 2.75
S. E. Ky. mine run.....	Chicago.....		1.85	1.50	1.50	1.25@ 1.75
S. E. Ky. lump.....	Louisville.....		3.00	2.50	3.00	2.50@ 3.00
S. E. Ky. mine run.....	Louisville.....		1.80	1.35	1.50	1.25@ 1.75
S. E. Ky. screenings.....	Louisville.....		1.40	.95	1.00	.85@ 1.15
S. E. Ky. lump.....	Cincinnati.....		2.85	2.60	2.50	2.25@ 3.00
S. E. Ky. mine run.....	Cincinnati.....		1.55	1.45	1.35	1.10@ 1.50
S. E. Ky. screenings.....	Cincinnati.....		1.05	.90	.85	.75@ 1.10
Kansas lump.....	Kansas City.....		5.00	5.00	4.85	4.75@ 5.00
Kansas mine run.....	Kansas City.....		3.50	3.50	3.35	3.25@ 3.50
Kansas screenings.....	Kansas City.....		3.25	2.50	2.50	2.50

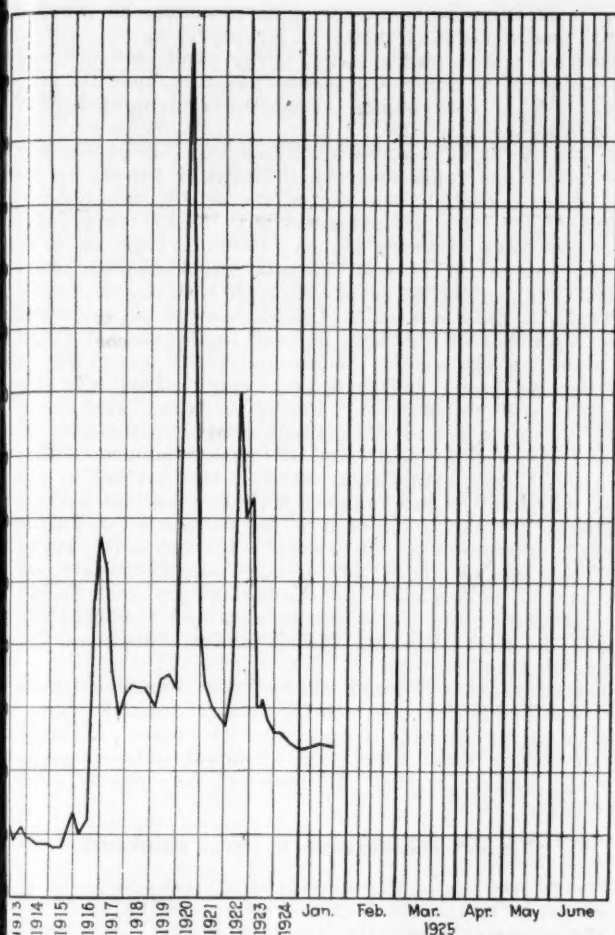
* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in heavy type, declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

		Market Quoted	Freight Rates	Jan. 21, 1924	Jan. 12, 1925	Jan. 19, 1925†
				Independent	Company	Independent
Broken.....	New York.....		\$2.34		\$8.00@ \$9.25	
Broken.....	Philadelphia.....		2.39			\$8.00@ \$9.25
Egg.....	New York.....		2.34	\$8.50@ \$9.25	8.75@ 9.25	\$8.50@ \$9.25
Egg.....	Philadelphia.....		2.39	9.00@ 10.00	8.75@ 9.25	8.80@ 9.25
Egg.....	Chicago.....		5.06	7.50@ 8.80	8.00@ 8.35	8.17@ 8.40
Stove.....	New York.....		2.34	9.75@ 10.50	8.75@ 9.25	9.00@ 9.50
Stove.....	Philadelphia.....		2.39	9.85@ 11.00	8.90@ 9.25	9.15@ 10.25
Stove.....	Chicago.....		5.06	7.95@ 9.25	8.00@ 8.35	8.53@ 8.65
Chestnut.....	New York.....		2.34	9.75@ 10.50	8.75@ 9.25	9.75@ 10.75
Chestnut.....	Philadelphia.....		2.39	9.85@ 11.50	8.90@ 9.25	9.75@ 10.75
Chestnut.....	Chicago.....		5.06	7.95@ 9.25	8.00@ 8.35	8.40@ 8.41
Pen.....	New York.....		2.22	4.75@ 6.25	6.15@ 6.65	6.15@ 6.60
Pen.....	Philadelphia.....		2.14	5.50@ 7.25	6.35@ 6.60	5.50@ 6.00
Pen.....	Chicago.....		4.79	4.50@ 5.60	5.40@ 6.05	5.36@ 5.75
Buckwheat No. 1.....	New York.....		2.22	2.25@ 3.50	3.50	2.25@ 2.75
Buckwheat No. 1.....	Philadelphia.....		2.14	2.00@ 3.50	3.50	2.50@ 3.00
Rice.....	New York.....		2.22	1.75@ 2.50	2.50	2.00@ 2.25
Rice.....	Philadelphia.....		2.14	1.50@ 2.50	2.50	2.00@ 2.25
Barley.....	New York.....		2.22	1.25@ 1.50	1.50	1.40@ 1.65
Barley.....	Philadelphia.....		2.14	1.00@ 1.50	1.50	1.50
Birdseye.....	New York.....		2.22		1.60	1.40@ 1.65

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type, declines in italics.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines
This diagram shows the relative, not the actual, prices on four-
in coals, representative of nearly 90 per cent of the bituminous
output of the United States, weighted first with respect to the
portions each of slack, prepared and run-of-mine normally
produced, and second, with respect to the tonnage of each normally
produced. The average thus obtained was compared with the
average for the twelve months ended June, 1914, as 100, after the
index adopted in the report on "Prices of Coal and Coke;
1918-1919," published by the Geological Survey and the War
Industries Board.

a tendency to weakness in screenings, which are in fair
production, and not meeting with the demand that could be
expected in view of active business conditions.

A number of mines which were slow in getting started
after the holidays are back in the producing class again,
while the mines which have gone non-union in western
Kentucky, while still showing only a percentage of capac-
ity production, with limited crews, are showing more and
better production. The strip mines in
western Kentucky have been favored by the weather and
have been getting out a good tonnage.

Western Kentucky is commanding around \$2.50@\$2.75
for best 6-in. block, with egg and lump at \$2.25@\$2.50.
It is weaker at \$1.75@\$2.15, while mine run is \$1.35@
\$1.75 quoted, but practically no movement is noted at over
\$2.00. Screenings are down to \$1@\$1.25 for all sizes.

In eastern Kentucky some operators are asking over \$3
for prime block, but the market is \$2.50@\$3 on good coals,
with 2-in. lump at \$2.25@\$2.50 and egg, \$2@\$2.25. Not
much nut coal is produced in the field, but it can be had at
\$2.50@\$3; mine run, \$1.25@\$1.75; screenings, 85c.@\$1.15.

Northwest Trade Continues Fair

At Duluth official estimates of stocks on Head-of-the-
lakes docks place soft coal at 4,300,000 tons, of which
1,000,000 tons is already sold, and hard coal at 395,000 tons,
free. Docks are working hard moving coal inland.
Prices have been readjusted slightly in the past week.
Pocahontas lump is being sold at \$9.50 by the only dock
which has it, and screenings have dropped to \$4 and in
some cases to \$3.75. Pocahontas screenings are a drug on
the market at present.

Buckwheat anthracite has been reduced to \$7. Many
are using this mixed with coke as a hard-coal substitute.
Kentucky lump is now \$6.25 instead of \$6 and Hocking
screenings have dropped to \$3.50 from \$3.75.

There is a better demand for hard coal since Pocahontas
has gone off the market. The price, however, is still too
high for the average buyer, and the demand for substitutes
is great.

Collections are reported exceptionably good in the coun-
try territory. This has aided much in bringing the country
dealers into the market, which is a big help for the docks.

Milwaukee dealers report the coal trade quiet, presumably
measuring the demand during the month thus far against
the rush of a December that was almost a record breaker
for low temperature. Coal is moving from the docks
steadily, as fires must be kept alive; and as reports indicate
improvement in the industries, the power plants must be
doing their share also. Dealers have advanced the price of
egg and nut Pocahontas \$1 a ton because of a lift in the
price at the mines.

There has been a good steady run of business in the
Minneapolis coal trade for quite a while. The severe
weather for several weeks finally overcame the inertia of
buyers, and for some time buying has been of the "old-
fashioned" variety that some discouraged coal men had
thought to have been out of date. Buying is not on as large
a scale as in former years, but it is assuredly better, and
still has a good month of coal-consuming weather to keep it
active.

Prices of dock coals have remained steady without change.
The attempt to raise the price of nut anthracite proved to
be impossible, and the increase was removed except with
one company that maintained a 15c. differential. It was
found that the trade would not pay the difference as long as
it was possible to buy from someone else at the old price.
All-rail prices remain as they have been—\$3.40@\$3.50 for
southern Illinois lump; \$3 for central Illinois lump, and
\$2.50 for western Kentucky lump.

West Is Active

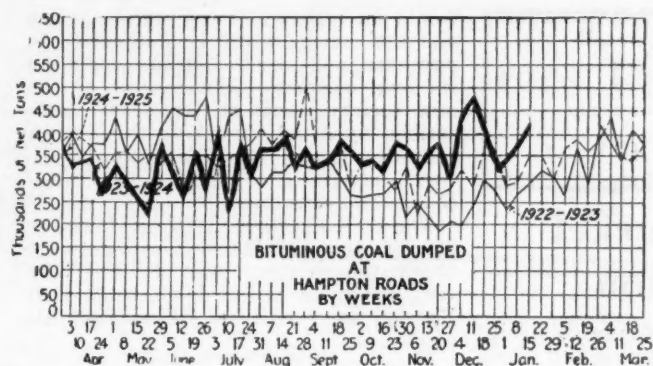
Kansas mines still are from ten days to two weeks be-
hind with deliveries of lump and from five days to a week
behind with deliveries of screenings. Arkansas screenings
still are short at \$2, while the Arkansas semi-anthracite
lump market, which was fairly brisk for a couple of weeks,
has returned to its midseason lethargy. Weather conditions
have been such the last week that Kansas mines have been
working full time. There have been no changes in prices
in any of the Southwestern fields since the last report.

In Colorado there has been no letup in the cold weather
during the past week, which has increased the demand very
materially over the preceding week, particularly on lump
coal. In fact the demand is greater than the supply and
as a result a good many of the operators are booking lump
orders only on condition that a certain amount of nut and
slack coal go with it. The mines are operating about 95
per cent; in other words they have reached practically the
maximum production, which has proved a boom to the
industry. The present price on Walsenburg-Canon City
lump coal is \$5.25; nut, \$4.25; no fixed price on slack coal;
washed pea coal, \$3.50; Trinidad Segundo coke, \$7.50;
Trinidad Segundo nut coke, \$6; Crested Butte base burner
anthracite coal No. 3 and No. 5, \$9; No. 6 chestnut, \$5.75.

Operators report business looking up in Utah's mine and
smelting field. Everyone expects the next month or two
to be good for the coal business. The domestic business
continues good, due to weather conditions, though there
has not been a repetition of the zero weather which pre-
vailed during the holidays. The car situation is good and
there is no labor trouble. Stocks in hands of dealers are
a little low for this time of year. Both retail and whole-
sale prices remain steady.

Softness Develops in Ohio Markets

At Cincinnati the domestic market in smokeless coals
holds up fairly well in spite of last week's period of softer
weather, but all forms of high volatile product show weak-
ness because of low demand and high production, as the
result of which the best markets are filled with distress
coal. There is some steam contracting for slack at \$1.25
and inquiries are increasing, but the spot steam coal market
is very weak. Tidewater demand is better and prices have
improved, especially on smokeless. Specialized coals are
quoted as follows: Egg, \$2.25@\$2.75; block, \$3@\$3.25.



trade. Consumers here are taking much larger tonnages of coal than they have for any time in twelve months, and every one looks for a progressively increasing trade here. The textile industry also has been looking up considerably. Consumption of railroad fuel is heavier and the roads are keeping their stockpiles high.

The better movement of domestic gas coal westward has created a larger tonnage of slack, all of which is quickly absorbed, as big users are creating much larger storage piles than they had last year.

Prices remain firm at last week's levels, and no one now looks for any recession. Shippers are not as eager for contracts as a month ago. There is only a limited amount of coal standing at tide, with the call for fuel moderate.

Baltimore Export Trade Disappoints

At Baltimore in the past week there was a little better inquiry and closings for some of the offices, but January has thus far been a disappointment. Certain lines of industry, however, are showing signs of renewed activity, and the coal trade is firm in the belief that an era of renewed business for the trade is due soon. Prices to the trade advanced somewhat since the first of the year, on some of the better grade coals especially, as a result more of prospects than actual conditions. The export movement, too, has fallen below expectations, there having been but two shipments so far this month.

While Birmingham dealers are booking about all the orders that they can conveniently handle they appear bent on cleaning up their stocks pretty closely before taking further shipments from the mines, and as a consequence the domestic market is sluggish and distress coal is again accumulating on tracks.

The demand for steam coal is moderately good. General industrial requirements the past week were somewhat heavier, a few small contracts being taken on, and spot sales and shipments against contracts in hand moved the output fairly well. The call for bunker coal was reported somewhat better than the previous week, an increased tonnage being taken on at several of the Southern ports. The furnace companies, several of which have placed additional iron makers in blast since the first of the year, are in need of a greater coke supply and are consequently operating their mines more regularly than prior to the holidays.

Quotations have weakened on the cheaper grades of steam and domestic fuel, but prices remain firm on the high grade lump and other domestic sizes despite the inactive market. Some mines report lost time on account of car shortage. Gondolas are short on all lines and other classes of equipment are not sufficient at times to meet requirements. Production is running about 370,000 tons per week.

Anthracite Situation Stronger

There is a better demand for all sizes of hard coal at New York due to better coal-consuming weather. Retail dealers have been hard pushed the past week to fill orders due to traffic conditions and the increased demand was reflected in more orders to the producers. Egg and pea, which have lagged in movement for some time, are now in better shape but are still far from normal. Chestnut and stove continue to lead the list of coals wanted. Much of the increased demand is the tonnage generally taken in January by consumers who in the fall put in enough coal to last them until after the beginning of the new year.

Quotations for independent coals register a slight average

advance over last week. The continuance of the strike in the Northern anthracite fields has strengthened the position of the steam sizes. This is particularly true of rice, barley and birdseye.

Though wintry weather continues at Philadelphia buyers are cautious, a large proportion of orders being for ton and half-ton lots. While deliveries have been hampered, dealers have no trouble in at least caring for all the needs of their customers.

The market continues to be almost centered on nut, company shippers reporting themselves behind on orders, but the independents continue to seek new business on this and all other sizes. Individual shippers are still able to maintain their price schedule, except for some slight cutting on egg and pea. This latter size is a particularly slow mover.

If anything the steam trade has slipped a bit recently, at least the independents have, as they are known to be offering rice and barley under circular to move surplus. Of course company producers are still resorting to their storage yards on steam sizes, much as they dislike to, although the tonnage is not very large.

Cold weather, with snow and sleet, in Baltimore has boosted business to a great extent. Orders have been fairly liberal and the coal men have been able to make prompt deliveries in most cases, as yard stocks were ample. Since the opening of the display of buckwheat coal burning devices some dealers report a material increase in orders for both buckwheat and pea coal. The trade feels that if burners for smaller sizes are installed in any great number of homes the cost of operation will be so far cut as to stop the move for substitution of coal burners by oil-burning devices.

Despite cold and snow, demand at Buffalo is not heavy. It used to take sunny days in March to cause consumers to cancel orders as often as sunny days came, but it is much that way all winter now. The tendency is to use gas when the weather is mild now, principally because of its convenience. No increase in anthracite prices has been made this month. The demand continues pretty one-sided, so many consumers feeling that they cannot burn anything but stove or chestnut sizes. The movement of independent anthracite is not very active. A little premium is asked, but there is so much loss on the small sizes that something has to be done to make sure of a profit.

The coke trade is still quiet at \$9.50 for furnace size at the curb. Slow handling is against the activity of all coke.

Coke Prices Continue to Sag

Connellsville coke prices have weakened farther, as shown by actual trading, but the trading has been light as there has been little spot demand and consumers who had been inquiring on contracts have been disposed to withdraw their inquiries. Spot furnace coke is now quotable at a flat price of \$4, against \$4@\$.4.25 a week ago, and the \$4 price is not strictly maintained. A little second quarter business is reported at \$5.25, but there does not seem to be any more inquiry for the quarter. Spot foundry coke is off 25c., at \$4.75@\$.5.25 for ordinary standard brands.

The weakening of the market in the past fortnight has really represented chiefly a failure of the market to establish itself at operators' asking prices, which may be said to have been based on a double advance, i.e., the advance in the open market that had occurred just before the wage scale restoration of Dec. 16, plus the advance involved in the increased wage cost. Consumers refused to go along with such a large rise. The market now is substantially equal to the prices of two months and more ago plus the cost of the wage advance. Or, to put it in another way, it is about equal to the market of a year ago, before the wage reduction which the recent advance balanced.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Jan. 3, 1925	765,727	180,468
Previous week	646,880	128,666
Week ended Jan. 5, 1924	706,292	159,511

	Surplus Cars		Car Shortage
	All Cars	Coal Cars	
Jan. 7, 1925	280,666	106,987	
Dec. 31, 1924	266,252	108,189	
Jan. 7, 1924	353,790	165,975	

Foreign Market And Export News

Upward Tendency in British Market Following Period of Fluctuation

South Wales coal markets show an upward tendency, with a substantial recovery in shipments and a marked reduction in stocks on hands of most sellers. Prompt deliveries, however, are occasionally irregular, as the market has been in a fluctuating state. Conditions have been very difficult for both operators and buyers due to the severe gales that have been lashing Britain. A large number of steamers due at Welsh ports have not arrived yet and several pits have been held up due to landslides on the railway lines, flooding of the workings and the general repair work always necessary after a short shutdown. In some cases the pits have been disabled due to gale damage to the compressed-air lines. A good part of January output is still unsold and much depends upon the weather. Business with Europe is slow, except that Spain is inquiring more actively. South

American trade, however, is fairly lively.

Trade in Newcastle is fair and there is sufficient demand to take all the coal available, which is very little. The north of England always takes longer to recover from Christmas than Wales and not very much business will be done in Newcastle until near the middle of January. Prices are held steadily though future prospects are uncertain. There are no contracts worth reporting, the largest being an inquiry from Bordeaux for 7,000 tons of Durham gas for February shipment.

Because of pressure at ports efforts have been renewed to effect resumption of the three-shift working system.

Production by the British collieries in the week ended Jan. 3, a cable to *Coal Age* states, was 3,921,000 tons, according to the official reports. This compares with an output of 3,433,000 tons in the preceding week.

Trade Is Fair at Hampton Roads With Strong Undertone

Business at Hampton Roads was fair last week, with prices strengthened by a shortage of coal at piers due to the shutdown for the holidays. Coastwise business was fair, bunker movement good and foreign business indifferent with some coal moving on old contracts.

A generally better outlook is seen by the trade, however, as business of the new year settled down. General shipping appears to be on the increase and bunker trade has been benefited thereby. The tone of the market is strong, and the trade was more optimistic than at any time in the last few months.

French Market Still Dormant; Wages Unchanged

A holiday atmosphere of dullness persists in the French coal market. The demand for industrial coal continues weak and household fuels are relatively quiet. Stocks, however, are normal at

the collieries and stationary at the traders.

Miners' wages in the Nord and Pas-de-Calais are to be maintained at their present level for the first quarter of the year. Selling prices, therefore, will be unchanged during that period.

There were rumors last week of a possible strike in the Sarre mines on Jan. 15, due to the refusal of the operators to increase wages. It was feared that the agitation might spread to the railwaymen. Some profess to see the hand of Germany in the agitation as the cost of living in the Sarre is lower now than in March last, when wages were raised to their present level.

In the first twenty days of December, France and Luxemburg were supplied with 452,000 tons of indemnity fuels, including 145,400 tons of coal, 277,000 tons of coke and 28,800 tons of lignite briquets.

Consideration is being given to the formation of a new society for the reception and sale of indemnity fuels in France. The Minister for Public Works

would fix repartition and selling prices and the society would be authorized to purchase and resell German coals on its own account. The capital of the new society would be 16,000,000f. subscribed by equal shares by the French collieries, transport organizations (railways, navigation companies, etc.), merchants and consumers.

The O. R. C. A. received in December 338,056 tons of Ruhr coke, or over 10,900 tons a day. Arrivals are very very irregular and it is probable that the deficiency will not be covered this month.

Export Clearances, Week Ended Jan. 17, 1925

FROM HAMPTON ROADS

	Tons
For Argentina:	
Br. Str. Culcombe, for Buenos Aires.	6,643
For Brazil:	
Br. Str. Isle Moor, for Rio de Janeiro.	4,827
Br. Str. Barrhill, for Rio de Janeiro.	6,382
Br. Str. Recca, for Rio de Janeiro.	7,336
Jap. Str. Malta Mau, for Rio de Janeiro.	6,650
Br. Str. Lavistan, for Rio de Janeiro.	5,845
For Canal Zone:	
Amer. Barge Darien, for Christobal.	7,343
Amer. Str. Ulysses, for Cristobal.	12,023
For Cuba:	
Nor. Str. Svartford, for Havana.	3,233
Nor. Str. Certo, for Nuevitas.	3,099
For Venezuela:	
Amer. Str. Mary Bradford Prince, for Tucacas.	1,484
For West Indies:	
Nor. Str. Bygdoo, for Port of Spain.	2,512
Amer. Str. Levisa, for Kingston.	2,193
Dan. Str. Nordkap, for Fort de France.	5,038

FROM PHILADELPHIA

For Cuba:	
Br. Str. Briarpark, for Havana.	—
Br. Str. Bedeburn, for Antilla.	—

FROM BALTIMORE

For Uruguay:	
Gr. Str. Vasilevusa, for Montevideo.	6,002

Hampton Roads Pier Situation

N. & W. Piers, Lamberts Pt.	Jan. 8	Jan. 15
Cars on hand.	1,149	1,351
Tons on hand.	74,803	79,936
Tons dumped for week.	120,628	125,791
Tonnage waiting.	10,000	2,000
Virginian Piers, Sewalls Pt.		
Cars on hand.	760	1,055
Tons on hand.	45,050	71,600
Tons dumped for week.	119,802	177,411
Tonnage waiting.	10,592	3,401
C. & O. Piers, Newport News:		
Cars on hand.	1,227	1,816
Tons on hand.	60,485	90,300
Tons dumped for week.	81,214	72,669
Tonnage waiting.	15,800	3,045

Pier and Bunker Prices, Gross Tons

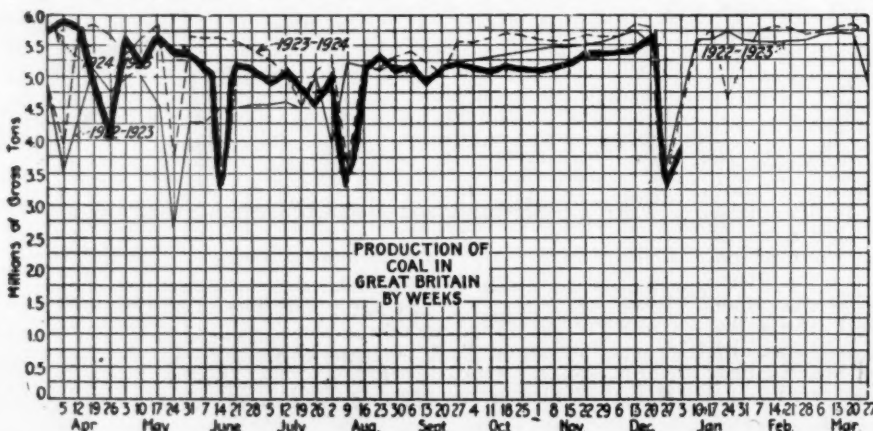
	PIERS	
	Jan. 10	Jan. 17†
Pool 9, New York....	\$4.75@55.00	\$4.75@55.00
Pool 10, New York....	4.55@ 4.70	4.60@ 4.65
Pool 11, New York....	4.40@ 4.55	4.40@ 4.55
Pool 9, Philadelphia..	4.90@ 5.25	4.90@ 5.25
Pool 10, Philadelphia..	4.45@ 4.70	4.45@ 4.70
Pool 11, Philadelphia..	4.30@ 4.50	4.30@ 4.50
Pool 1, Hamp. Roads.	4.20	4.35
Pool 2, Hamp. Roads.	4.10	4.15
Pools 5-6-7 Hamp. Rds.	4.25	4.00
	BUNKERS	
Pool 9, New York....	\$5.00@55.25	\$5.00@55.25
Pool 10, New York....	4.80@ 4.95	4.75@ 4.90
Pool 11, New York....	4.65@ 4.80	4.65@ 4.80
Pool 9, Philadelphia..	4.90@ 5.25	4.90@ 5.25
Pool 10, Philadelphia..	4.75@ 4.95	4.75@ 4.95
Pool 11, Philadelphia..	4.50@ 4.70	4.50@ 4.70
Pool 1, Hamp. Roads.	4.30	4.40
Pool 2, Hamp. Roads.	4.20	4.25
Pools 5-6-7 Hamp. Rds.	4.25	4.10

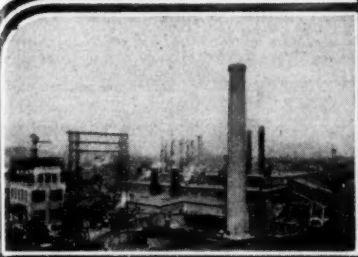
Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations by Cable to Coal Age


	Jan. 10	Jan. 17†
Cardiff:		
Admiralty, large	27s. @ 27s. 3d.	27s. @ 27s. 6d.
Steam smalls....	16s. 6d.	16s. @ 16s. 6d.
Newcastle:		
Best steams....	18s. 6d. @ 22s. 6d.	18s. 3d. @ 22s. 6d.
Best gas.....	21s. 6d.	21s. 6d.
Best Bunkers...	19s. @ 20s.	19s. @ 20s.

† Advances over previous week shown in heavy type, declines in italics.





News Items From Field and Trade



ALABAMA

The Koppers Engineers of Pittsburgh, Pa., have commenced work on the construction of 40 byproduct ovens for the Woodward Iron Co., at Woodward, according to announcement of Frank H. Crokard, president of the company. Besides this contract the Koppers Engineers contracts with the Alabama By-Products Corporation and the Republic Iron & Steel Company, to erect ovens at a cost of about \$4,000,000.

The Moss-McCormick Co. has leased 1,800 acres of coal lands from the federal government in Fayette County for \$85,000 and 10c. per ton royalty. The company announces that it will make open openings on the property and will produce a large amount of coal daily. Tracks to the new mines will run from Carbon Hill, at which place the company has opened offices.

ILLINOIS

The Donk Bros. Coal & Coke Co., with three or four operations in Madison and St. Clair county has recently appointed the Hedstrom-Schenck Coal Co., of Chicago, as exclusive sales agents for their coal.

Mine No. 4 of the Saline County Coal Co., located seven miles west of Harrisburg, has resumed operations, with 375 men working full time.

The holdings of the Jackson Coal Co., near St. Louis, have been ordered sold Feb. 21 by the Federal District Court.

A new strip mine has been opened at Duquoin by R. L. Van Hooen, of Ferrin. The mine taps No. 6 vein, 9 ft. thick and under about 20 ft. of overburden. Two large steam shovels have been put on the work and it is expected the mine will produce approximately 40 tons per day.

The Divernon mine of the Madison Coal Co. is now working for the first time in several months. More than 100 men have gone back to their old employment at the mine.

KANSAS

Pit mules will no longer "do time" in the Kansas penitentiary at Lansing. A new electric locomotive will replace the mules used to pull coal cars in the state prison mine.

The Kansas charter board has granted a charter to the H. & H. Coal Mining Co. of Mulberry, with a capitalization of \$20,000. Dr. J. R. Benson is president and W. L. McCullough is secretary-treasurer. It has

purchased a slightly used steam shovel which it will use on a lease near Oskaloosa, Mo.

KENTUCKY

As a holiday gift for its employees the Atlas Coal Mining Co., Inc., established a group insurance program which includes in its coverage about fifty workers for a total of \$25,000 protection. The offices of the Atlas company are located at Middlesboro and the mine at Logmount, Ky. The insurance program was underwritten by the Metropolitan Life Insurance Co. and provides individual protection ranging from \$500 to \$1,000 on a length of service basis.

Wheeler Brothers, Lexington and eastern Kentucky operators, wanting a coal yard connection at Lexington, have purchased the yard of D. C. Frost & Co., which was started more than forty years ago. George Pilcher, who has been with the concern for thirty years, has been engaged under a three year contract as manager.

Judge Charles H. Moorman has granted a temporary injunction to the Gibraltar Coal Mining Co. against striking miners, the union and its officials, on complaint of the company that its miners were being scared from their work at the Brownie, Brownsville and Holt mines by intimidation. Ropes and notes have been left at homes of those returning to the mines.

William A. Clarke, Jr., head of the intelligence service department, Kentucky National Guard, after a survey of conditions in the western Kentucky strike zone, held that there was some intimidation of miners and of miners arriving in the field on trains but that the situation was not serious and that conditions are quiet in the fields.

MINNESOTA

No bids were offered Jan. 6 at the attempted public sale of the retail yards in Minneapolis and St. Paul belonging to the Reeves Coal & Dock Co., so the sale was continued to Jan. 14.

MISSOURI

On Jan. 13 Arch Helm, of Lexington, was re-elected president of District 25, United Mine Workers, which includes practically all of Missouri and Leavenworth County, Kansas. Other officers elected were: Vice-president, Frank Bunch, Richmond; Secretary-treasurer, George Hepple, Moberly; District auditors, George Bell, Fleming; Charles H. Stafford, Huntsville, and Harry

Williams, Richmond; International board member, Andrew Steele, Novinger. A. G. Llewellyn, of Novinger, and Pat McKenna, of Lexington, were named district board members from subdistrict No. 2.

NEW YORK

Milton Harrison was elected to the Board of Directors of the Coal & Iron National Bank of the City of New York on Jan. 13. Mr. Harrison is president of the National Association of Owners of Railroad Securities; executive vice-president of the National Association of Mutual Savings Banks and trustee of the Bowery Savings Bank.

Robert R. Schote, formerly secretary and treasurer of the Coaldale Mining Co. of New York, associated with that concern continuously for over 23 years, and G. Mason Janney, formerly general manager of the Pennsylvania & West Virginia Co., with over 27 years continuous service in the coal trade, have formed the Janney Coal Mining Co., with general offices at No. 1 Broadway, New York City.

OHIO

Four men were killed, two instantly, when a powder explosion occurred in the Cleveland & Western mine, south of Powhatan, Saturday night, Jan. 10. All of the bodies have been recovered. The dead: Charles Luxbacker, aged 42 years, night foreman; William Payunk, aged 32 years; Andy Artor, aged 34 years; William Bell, aged 26 years. Luxbacker and Payunk, company officials say, were hauling 57 kegs of high explosive powder into the mine on a motor car.

A three-day conference of deputy mine inspectors was held in Columbus Jan. 13 to 15, when many problems connected with the inspection of Ohio mines were discussed. The discussions were led by Jerome Watson, chief mine inspector. Installation of electric wiring with proper insulation and keeping oil stations on the outside rather than the inside of mines were two of the chief recommendations. Lot H. Jenkins, a deputy inspector, read a paper on "Mine Fires," and R. W. Smith spoke on "Dust Explosions." Recommendations of the conference will be presented to the Ohio Legislature for action.

W. S. Dudley, of Lexington; John C. Gorman, of Lexington; Roy Carson, traffic manager of the Hazard and Appalachia Coal Operators Association; A. L. Allais, of Chicago, and Joe E. Johnston, of Hazard, met with local

members in Cincinnati on Jan. 9 to arrange for the annual meeting of the Hazard Coal Operators' Association.

E. C. Mahan, president of the Southern Coal & Coke Co., presided at a meeting of the operating men and sales representatives of his company held recently in Cincinnati. W. G. Lantry, of Chicago, president of the Commercial Testing & Engineering Co., talked on "Combustion of Coal." Meetings were held at the Hotel Gibson in Cincinnati and a banquet brought the sessions to a close.

Burke H. Kenney, president of the Cincinnati Coal Exchange, has appointed Julius H. Ratterman (chairman), W. T. McElroy, Robert Dickson, John Hoffman and Charles Heitzman, as a committee to arrange for the annual meeting and banquet of the organization.

The mine of the Starr-Jackson Coal Co., Jackson, which was forced into the hands of a receiver recently, is being operated by the Southern Coal Co. on a temporary arrangement. The mine is located in the Jackson field.

The Gem Coal Co., at New Straitsville, has been placed in operation after an idleness of several months, giving employment to 75 men.

James Williamson, president of the Caledonian Coal Co., Columbus, has been made a defendant in two suits filed in the local courts by Otto Leadenhaus to recover \$4,000 in a stock deal.

Two mines operated by the Ohio Central Coal Co. and the Elm Coal Co., located near New Lexington, have resumed operations after an idleness of about 18 months. Employment is given to about 85 miners.

PENNSYLVANIA

Seven hundred miners employed at the Valley Camp mine, New Kensington, walked out on an unauthorized strike Jan. 7, alleging that the union rules had been violated by the operators. The local union opposed the strike and as a result each miner will be fined \$1 a day.

R. E. Howe, secretary of the Southern Appalachian Coal Operators Association, was a recent visitor to the Cincinnati market in an effort to obtain closer co-operation between the mechanical end and the sales departments of mines in that district.

Approximately 20,000 tons of anthracite has been taken from the Susquehanna River at Esby, Almedia, Berwick and Bloomsburg by dredgers during the last six months. The fuel is washed down from the collieries along the river banks and is easily salvaged from the river bed. Most of the coal is stored for use of large industrial plants in the region. Only smaller sizes are secured by dredging.

Fire insurance agents in this state have ordered coal companies to replace all bare stovepipes that extended through the roofs of company houses with brick chimneys. In the Shamokin field the Girard estate has already started to put the orders into effect.

H. B. Pearson, Jr., of Uniontown, assistant to General Superintendent John Sincok, of W. J. Rainey, Inc., has resigned his position and will remove to Troy, N. Y., where he has accepted a position with a large manufacturing concern.

So far no arrests have been made in the dynamiting of the powder house at the Underwood mine of the Pennsylvania Coal Co. at Olyphant. The coal company officials were quoted after the explosion as stating that the explosion was caused by some of the striking miners. This was denied by the strikers' leaders, who announced that the general grievance committee of the workers had offered a reward of \$500 for the arrest and conviction of those responsible for the outrage.

More homes in Mahanoy Plane are to be torn down to pave the way for mining operations by the Girard estate. At one time there were fifty homes in the "foot" section of the town, but in the near future all but two of these will have disappeared.

In order to accommodate many miners from the nearby towns who go to work in their autos, the Alliance Coal Co., at Middleport, has inaugurated a paving program of its own and is now placing approaching roads in first class condition.

Appointment of D. L. Davis as division engineer for the Susquehanna division of the Lehigh Valley Coal Co. has been announced at offices of the concern in Wilkes-Barre. He succeeds the late J. E. Anderson.

The Oakmont mine of the Hillman Coal & Coke Co., at Barking, is on fire and officials fear the entire workings may be destroyed. Expert fire fighters from Pittsburgh are battling with the flames. Last fall the Oakmont mine was on fire and it was sealed in an effort to smother the blaze. When it was opened, however, fire broke out anew.

In a decision handed down last week by Judge Chase of Clearfield County,

Peter Mallon, a former organizer for the United Mine Workers, was given judgment for \$543.15, against President John Brophy, Secretary-treasurer Richard Gilbert and other officials of District No. 2. Mallon, who had been employed as an organizer in Somerset County during the strike in 1922 and alleged that he had been summarily dismissed and his claim was for two and one half months salary and expenses. The U. M. W. officials refused payment, claiming the right to suspend payment of workers during a strike period.

Andrew Matti, vice-president of District 7, United Mine Workers, who will succeed Thomas Kennedy as president of the district, was stricken seriously ill while en route from Florida to Hazleton on Jan. 14. He is in a hospital in Newark, N. Y. Mr. Matti served as vice-president of the district for twenty-nine years. He was in Florida recuperating from a recent operation. His condition is grave.

The W. J. Rainey Co., which for several months has been shipping coal from its various plants in the Connells-ville coke region, last week fired most of the coke ovens at its several plants.

Isaac Taylor, of Uniontown, president of the Snowdon Coke Co., who had his leg amputated a few weeks ago, is able to be about again, and is now visiting at the home of his daughter, Mrs. Samuel A. Gilmore, in Pittsburgh, Pa.

The American Coke & Fuel Corp., which resumed mining coal a couple of weeks ago, after being shut down for over a year, fired 40 coke ovens last week at its plant near Brownsville.

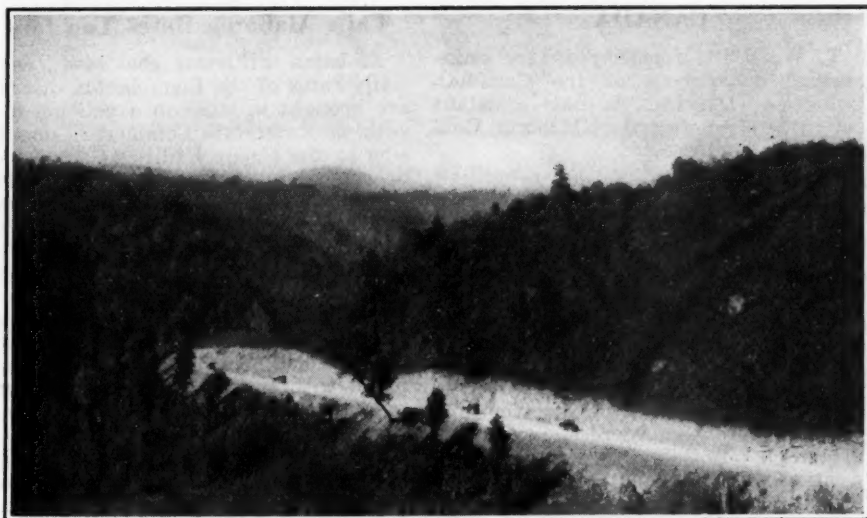
Scranton coal operators are interested in the proposed purchase of the abandoned Coleraine colliery owned by the Van Wickle estate and located about five miles out of Hazleton. The Coleraine, which was "finally" abandoned some weeks ago after the last of three groups of operators had given it up as worked out, incidentally making some money removing the last of



Tipple at Eureka Mine

This operation of the Bertha-Consumers Co., located at Randall, near Morgantown, W. Va., is well equipped for the thorough preparation and screening of coal. Four sizes are prepared: Block, egg, nut and slack.

Courtesy Bertha-Consumers Co.



One of the New Roads in the Pocahontas Region

The trip through the coal fields of McDowell County from Bluefield to Welch, whether by the Peeled Chestnut or the Elkhorn Creek route, has a scenic character rarely equaled. At one time an almost inaccessible country, it now has roads as good as are to be found anywhere.

the coal, was inspected by engineers for the proposed purchasers. According to the report of the surveyors there is still much minable coal in the workings. There also is a large culm dump and a breaker on the property.

Application has been made to Judge Eugene G. Baird, of Clinton County, for the appointment of a receiver for the Blanchard-Moshannon Coal Co., with operations at Karthaus, Clearfield County, and head offices in Pittsburgh. This company was organized a year and a half ago for the purpose of developing a large coal tract.

UTAH

B. W. Dyer, chief mine inspector for Utah and local representative of the U. S. Bureau of Mines, has issued a report in which he says workable coal areas in Utah are estimated by him at 13,130 square miles with 196,458,000,000 tons. The report also states that more than 90 per cent of the coal mined in the state comes from Carbon County. The original coal deposits of Utah have been decreased but one-half of 1 per cent, it is estimated.

R. M. McGraw, general superintendent of the United States Fuel Co., has gone East following a leave of absence of several months. Mr. McGraw has been in poor health for the past few months.

The Utah State Industrial Commission has decided that the state coal mine inspector should reside in Carbon County, where the bulk of the coal mined in the state is produced, and hereafter Inspector John Crawford will make his headquarters at Price, the Carbon County seat. The move, it was stated, is in the interest of better inspection and economy in time and traveling expenses.

J. V. Reynolds, vice president of the American Institute of Mining Engineers, was the guest of honor at a luncheon and meeting of the Utah chapter recently held in Salt Lake City. Papers were given on safety regulations in Utah coal mines, after

which there was a discussion. O. Herres, of the United States Fuel Co., had charge of the program. Among those who gave papers were B. Y. Dyer, local federal mining inspector; A. C. Watts, chief engineer, Utah Fuel Co.; Daniel Harrington, consulting engineer; H. T. Plumb, prominent local electrical engineers, and others. It was announced that the next gathering of the national body will be in Salt Lake City some time next summer.

In his annual report B. W. Dyer, chief mine inspector of the state, comments, among other things, on mine inspections. "At present," he says, "the state pays the salary of one coal mine inspector, and through a co-operative agreement with the U. S. Bureau of Mines the services of three of the bureau engineers have been secured, yet the mines have not had the proper inspection. The present agreement with the Bureau expires March 31, 1925, and, if the state expects to conduct its own coal mine inspection department after that date, and do it with any degree of efficiency, there should be at least three coal mine inspectors, and, should the present arrangement be renewed, the state should furnish not less than two coal mine inspectors. At least 50 per cent of the large operating mines and a still larger percentage of the wagon mines of the state are operating in whole or in part on lands leased from the government, hence, in directing the coal leasing of the federal government, the engineers of the U. S. Bureau of Mines will continue the inspection of these mines."

WEST VIRGINIA

A grand jury in Kanawha County returned murder indictments against Dave Conley and James Carpenter, charging them with the death of W. S. Fraker in the Racoon mine shooting at Kayford on Dec. 16. The grand jury also returned an indictment against John McCormick as an accessory before the fact. After the trouble at Kayford,

when a group of ten miners were fired upon from ambush as they were being hoisted to a mine entrance, bloodhounds tracked Conley and Carpenter to the home of E. H. Wynn. A large number of shells were found by county officers at the foot of a large tree about 50 yd. from the mine.

Work of sinking three new coal shafts at a cost of several million dollars will be started at Mason City, by the Consolidated Coal Co., it was announced Jan. 13 by W. W. Mullins, representative of the company. The new mines will be sunk in 25,000 acres of coal land owned in the county by the Rockefeller interests, through the subsidiary company, the Wheeling Steel Corporation.

Damage estimated at \$2,000 to the aerial tramway of the Whiteman mine of the Clarksburg Big Vein Coal Co. near Wilsonburg was caused last week by an explosion of dynamite that shook office buildings in Clarksburg, more than three miles away. The explosion is the third one in recent months at the same mine. The blast is believed to be the result of trouble between the union and non-union miners of the central West Virginia coal region. The Whiteman mine has been working on an open shop basis and about sixty men are employed.

The committee appointed by Governor Morgan to recommend to the Legislature the proper location for the State Mining School held a meeting at Charleston on Jan. 15 for the purpose of preparing a final report to be submitted to the Legislature. Senator A. L. Helmick, of Tucker County, is chairman of the committee. Senator Helmick is engaged in the mining business.

J. T. Dunigan, general manager of the Coal River Collieries Co., has characterized as absurd the statement of Percy Tetlow, acting president of District 17, that the mines of the company are and have been shut down as the result of a strike. In denying the truth of Tetlow's assertion Mr. Dunigan declares: "Our records will show that not only was there no strike at Mine No. 4 on Dec. 12 but that on that date we had more men working there than we had had for some time. The number has varied but little."

Orders have been placed by the Island Creek Coal Co. for several storage-battery locomotives as well as for some Coppus mine ventilation systems.

J. C. McKinley and others of the Richland Coal Co., of Wheeling, who have taken over the properties of the Black Betsey Consolidated Coal Co., on the Kanawha River are proceeding with additional development, including a new steel tippie.

Coppus blowers are being installed in the shaft mines of the Raleigh Wyoming Coal Co. at Glen Rogers, under the direction of General Manager Carl Scholz. The blowers are to be used in driving out gas coming into the pit through fissures in the shaft walls.

Leo P. Caulfield, of Clarksburg, receiver of the Long Coal Mining Co., has sold to Herbert Van Fleet, secretary

and general manager of the company, the Gladius mine located on the Baltimore & Ohio near Reynoldsville, for \$40,000. There are approximately 560 acres of Pittsburgh coal land in connection with the mine. The lease on the Phoenix mine, which the Long company holds, was purchased by Gordon Dolan, superintendent of the company, for \$100. The mine is owned by the Alpha Portland Cement Co. The mine is in a tract of 521 acres.

A washer for nut and slack is to be installed by the Winding Gulf Colliery Co. at Winding Gulf. The Elk River Coal & Lumber Co. also intends to install a Montgomery washer to wash about 1,200 tons a day.

Sale of the holdings of the Harrison-Barbour Coal Co. to M. G. Sperry, of Clarksburg; Arthur Dayton, of Philippi, and Fred O. Blue, of Charleston, by special commissioners was not confirmed by Judge Haymond Maxwell of the Harrison County Circuit Court on the ground that an adequate price had not been paid. Taney Harrison, of Clarksburg, and Kemble White, of Fairmont, special commissioners, had sold 1,900 acres of Pittsburgh coal land and 1,000 acres of Freeport coal to the parties named. After the sale the creditors brought suit against the purchasers. The coal lies in the Elk Creek and Brushy Fork sections of Harrison and Barbour counties.

In discussing methods of mining which might be more conducive to the safety of coal miners, the Panhandle Mining Institute at a recent meeting devoted much time to the subject of rock dusting. The institute also discussed the use of safety lamps and permissible powder and the sentiment was general that the Legislature ought to enact laws making the use of safety lamps and of permissible explosives compulsory. At the annual meeting of the institute, which was held on Jan. 21, officers were elected.

The Rowmont Coal Co., of Hamilton, Ohio, has been granted a certificate of incorporation by the Secretary of State of West Virginia and has been authorized to issue \$50,000 in capital stock. This company was organized by George D. Rowland and others of Wheeling.

Preparations are being made to resume operations on an open-shop basis at the No. 8 mine of the Bethlehem Mines Corporation near Farmington in Marion county. The mine has been closed since April 1, 1924. Notices have been posted that the mine will be started within a short time and offering employment to the old men at the 1917 scale, which is in force at other mines of the company. A high wire fence like that at the Barracksville and Dakota mine settlements is being erected and a lighting system including a high-powered searchlight is being installed. The Bethlehem Corporation operates a battery of coke ovens in conjunction with the No. 8 plant. It is not known whether or not the coke ovens will be put in blast. The No. 8 mine—a shaft mine—operates in the Pittsburgh seam, producing a coal low in sulphur and generally available for the production of coke.

CANADA

T. W. Scott, formerly in the engineering department of the Canadian Collieries (D), Ltd., is now assistant superintendent for the Cadomin Coal Co. of Cadomin, Alta.

As a result of a deputation of miners from the Mountain Park Coal district waiting upon the provincial government recently it is hoped that some form of hospital service will be established there soon. Four mining centers will benefit by such action, which is badly needed for emergency purposes. At present the nearest hospital is at Edson, and not infrequently cases have to suffer the long journey into Edmonton before receiving proper attention. Within a week after the petition was submitted, George Hoadley, Minister of Health, announced that the government hoped to provide a workable plan whereby the responsibility for the upkeep of a hospital would fall upon the miners and operators, while the government probably would supply a cash grant on the basis of the number of patients treated.

It is estimated that the coal output of British Columbia for 1924 will approximate 1,968,767 tons, compared with 2,453,223 tons in 1923. The difference is due to a shutdown of the collieries of the Crow's Nest Pass Coal Co. for about seven months owing to labor troubles. The decrease in the value of coal products in comparison with the previous year will amount to about 20 per cent. As it is estimated that the value of all the minerals produced by British Columbia during 1924 shows an increase of some 9 per cent over 1923 it will readily be seen that the falling off in coal output alone has prevented British Columbia making a remarkable showing in the growth of mining.

Traffic

Suspends New Alabama Coal Rate

Proposed new coal freight rate schedules on the Illinois Central R.R. affecting the through rate on coal from certain Alabama mines to various points of destination when the coal is made into coke in the Birmingham vicinity, were suspended from Jan. 12 to May 12 by the Interstate Commerce Commission in an order issued Jan. 10.

The suspended schedules proposed to establish on coal from certain mines in Alabama, stopped for coking at Birmingham, North Birmingham, Ensley and Woodward, Ala., net rates lower than the regular coal rates, which the Illinois Central R.R. will protest from point of origin to the points named when coking privilege is used and the coke reshipped out over the Illinois Central within one year from date of the original inbound freight bill. This tariff also provides that the difference between the coal rate and the rate protected will be refunded to the shippers of the out-bound coke.

The Chicago, Rock Island & Pacific Ry. has promoted J. C. Gutsch and F. A. Adams to become assistants to the freight traffic manager.

Calls Alabama Rates Too Low

Alabama intrastate coal rates, especially rates of the Birmingham district, are brought in issue in a petition filed with the Interstate Commerce Commission by the Public Utilities Commission of the state of North Carolina. The complaint alleges that North Carolina industries are in competition with Alabama Industries; that coal is a basic commodity in operating industries, and alleges that rates on coal from mines in Tennessee, Virginia and West Virginia to North Carolina are higher, distances considered, as compared with rates from Alabama mines to Alabama industries. It is claimed that this is unjust discrimination to North Carolina consumers. The date of the hearing before the Interstate Commission has not been fixed. Members of the Alabama Public Service Commission will attend the hearing.

New Companies

Two new coal companies recently chartered were the **Black Pearl Coal Co.**, at Coolidge, Ky., capital \$50,000, by Henry Daab, W. R. Davies and G. M. Shoemaker, and the **United Coal & Coke Co.**, Louisville, capital \$25,000, chartered by C. L. Bell, Paul Winn and P. H. Hutchison, the debt limit being \$25,000.

John Conlon Coal Co., Hudson, Pa., has been incorporated with a capital stock of \$750,000 by John Conlon, Hudson, treasurer; Mary Conlon, Hudson, and William R. Conlon, Hudson.

With a capital of \$48,600, the **Kentucky Coal & Land Co.**, Pikeville, Ky., has been incorporated by Ballard and Ella Weddington, J. L. Morgan and Rudolph Rutherford.

The office of the Secretary of State at Frankfort, Ky., on Jan. 8 announced approval of the following coal company charters: **Puritan Coal Co.**, Bowling Green, capital, \$30,000; James M. Thompson, T. B. Dixon and W. R. Gardner. **The James Hatcher Coal Co.**, Big Shoals, capital \$200,000; James Hatcher, J. B. Polley and Alpha R. Polley. The same men incorporated the **James Hatcher Land Co.**; capital, \$100,000.

Coming Meetings

American Management Association. Annual convention, Jan. 28-30, Hotel Astor, New York City. Managing director, W. J. Donald, 20 Vesey St., New York City.

American Wood Preservers' Association. Twenty-first annual convention, Feb. 3-5, Congress Hotel, Chicago, Ill. P. R. Hicks, secretary, Service Bureau, 1146 Otis Building, Chicago, Ill.

American Institute of Electrical Engineers. Midwinter convention, Feb. 9-13, 1925, 29 West 39th St., New York City. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Northern West Virginia Coal Operators' Association. Annual meeting, Feb. 10, Fairmont, W. Va. Executive vice-president, George S. Brackett, Fairmont, W. Va.

Rocky Mountain Coal Mining Institute. Albany Hotel, Denver, Colo., Feb. 16, 17 and 18. Principal program subjects are rock dusting, underground loading and safety measures. Benedict Shubart, secretary-treasurer, 520 Boston Bldg., Denver, Colo.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 16-19, 1925, 29 West 39th St., New York City. Secretary, F. F. Sharpless, 29 West 39th St., New York City.

New England Coal Dealers' Association. Annual meeting, March 25-26, Springfield Auditorium, Springfield, Mass. Secretary, C. R. Elder, 141 Milk St., Boston, Mass.

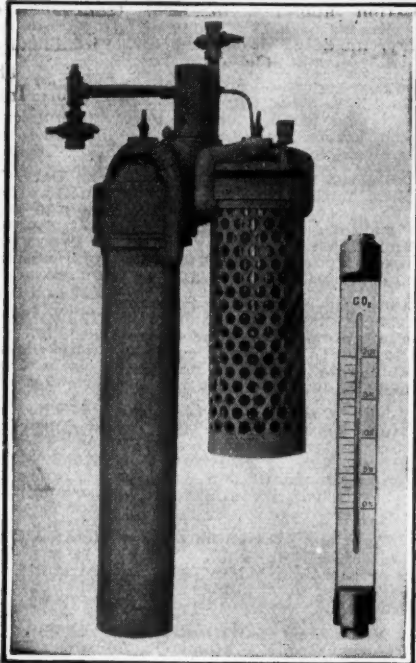
Mine Inspectors' Institute of America. Annual Convention May 19, 1925, at the Jefferson Hotel, Peoria, Ill. Secretary, G. B. Butterfield, Hartford, Conn.

New Equipment

Carbon Dioxide Indicator Has Renewable Cartridge

A simple and inexpensive CO₂ instrument especially for small power plants has been developed by the Uehling Instrument Co., Paterson, N. J.

The instrument consists of two principal parts, the actuating device, or



Aspirator and Indicator

The absorbent cartridge used with this device is readily renewable. Variations in pressure on the manometer indicate the percentage of CO₂ in the flue gas.

CO₂ meter, and the gage, or indicator. The flue gas flows through the CO₂ meter continuously, developing a changing pneumatic pressure within it, the magnitude of the changes depending on the percentage of CO₂ present in the gas. The CO₂ is absorbed in a dry cartridge placed in the meter. The absorption of CO₂ causes a shrinkage of the gas flowing through the meter and hence a reduction in the pneumatic pressure. The indicator shown at the right of the figure consists simply of a manometer containing a glass tube filled with colored liquid, which changes its level according to the pneumatic pressure applied to it. A scale beside the indicating manometer is graduated in percentages of CO₂.

A simple steam or water aspirator is used to draw the gas from the boiler, through the meter, a large quantity of gas being bypassed around the meter at the same time. The suction from the aspirator is maintained constant by a simple hydrostatic regulator consisting of a closed vessel filled with water, the space above which is connected with the aspirator. An air inlet pipe extends into the water to a point near the bottom of the vessel and is so arranged that air may be drawn

in through the bottom of this pipe and caused to bubble up through the water under the effect of the suction above the water. This bubbling air automatically prevents the suction from increasing beyond the point for which the regulator is designed. The water level in the regulator is kept constant by a fixed overflow. The absorbent cartridges used with the instrument are each guaranteed for a life of 1,200 per cent hours and are readily renewable by removing the clamp and cover from the chamber shown at the left of the instrument and inserting a new cartridge.

The instrument employs the "Pyroporus" filter, which is placed on the end of the sampling line within the boiler setting to exclude soot and ash. A secondary filter removes the sulphuric acid fog from the gas and tends to dry it, thus preventing corrosion of the sampling line. A corresponding instrument of the recording type is also being introduced.

Fast and Accurate Grinder For Use in Small Shop

The Black & Decker Manufacturing Co., Towson, Md., has announced an addition to its line of portable electric tools in the form of an electrically-driven bench or pedestal grinder for sharpening twist drills. This grinder will quickly and accurately grind straight or taper shank twist drills up to 8-in. diameter.

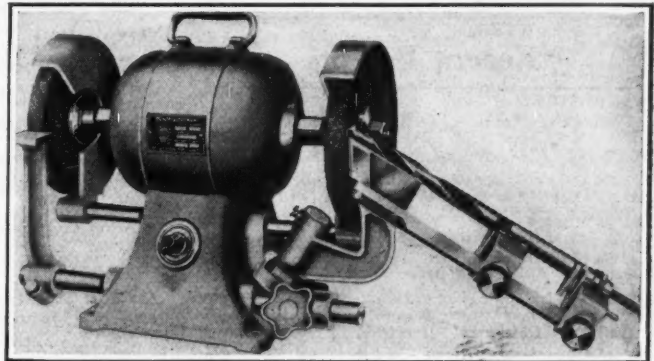
The twist drill is fed to the cup grinding wheel by means of a micrometer-screw feed. No adjustments are necessary for grinding different sizes of twist drills, compensation for this being made in the design.

MEETS ALL REQUIREMENTS

Heretofore, the small machine shop has had to depend upon free-hand methods of grinding twist drills because they could not obtain a reasonably priced machine to do the job quickly and accurately. The 6-in. twist drill grinder fills a long-felt need and its use will insure twist drills being ground at the right angle, with proper clearance and with both cutting tips exactly the same length. Correct grinding will not only make the twist drill cut faster and truer but will also

Sharpens Drills Properly

With this grinder it will be an easy matter to sharpen drills so that they will cut quickly and not break.



better the performance and increase the life of drill machines.

The twist drill grinder is furnished complete with one general-purpose grinding wheel, one cup wheel, one tool rest, two wheel guards, electric switch in base and electric cable fitted with attachment plug. It can be plugged into a lamp socket and is ready to run when received. A pedestal with water pot for conveniently mounting the grinder in the tool room or machine shop is also provided.

Tire Heater Is Equipped With Vacuum Torch

A tire-heating unit designed to operate without pressure on the oil tanks or hose lines and which, it is claimed, cannot blow up or cause fires, is shown in the accompanying illustration.

The unit is a recent addition to the line of the Mahr Manufacturing Co.,

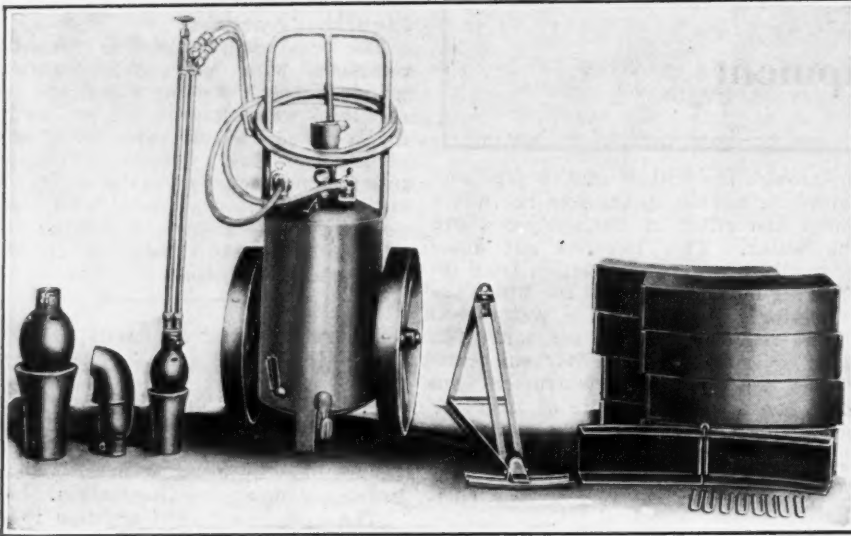


Assembled Heating Units

These parts are placed around the tire and confine the flame so that it will do its work quickly.

Minneapolis, Minn. The tire heater is used in connection with the company's No. 101 Mahrvel safety vacuum tank, which has been approved by the National Board of Fire Underwriters' Laboratories. It is made up of a light stand, a special nozzle and steel housing. The housing is assembled by sections around the periphery of the tire to be removed, and two flames, from the bottom of the tire and in opposite directions, are forced around its entire circumference within the housing. The greater part of the heat is confined to the rim, and it is claimed that the heating is unusually rapid.

This combination torch and tire heater is adapted to a variety of uses



Complete Equipment for Heating Steel Tires

Aside from being used to heat tires, such an outfit as this can be used for thawing frozen pipe lines. The torch may be used also for starting a fire in the furnace of a steam locomotive.

at mine shops. In thawing out locomotive ash pans, hoppers and other frozen parts it is said that the time required is but a few minutes as compared with hours when using steam. The torch may be used to light the fires in the furnaces of locomotives, in which service it is also a time saver. Other uses

include the heating of parts to be straightened and preheating of parts to be welded. For thawing out frogs, switches and other mechanism around the shops, the compressed air may be supplied from the air-brake pump on a locomotive if other sources of such power are not available.

Doubly-Connected Breakers

Double-pole "interlocked-trip" and "shock-proof" circuit breakers are new types being placed on the market by the Roller-Smith Company, 233 Broadway, New York. The interlocked-trip breaker is so arranged that the two poles are closed independently and successively. Should an overload exist the pole first closed will open as soon as the second pole is closed, and after both poles are closed if an overload should occur both poles will open simultaneously. This type of breaker is intended for use largely on motor and feeder circuits in place of switches and fuses.

"Shock-proof" circuit breakers are intended for operation under conditions of excessive vibration or subjection to mechanical shocks as to cause undesired opening. Any listed standard type circuit breaker can be supplied with shock-proof attachments to meet any requirements. It is said that the addition of this attachment does not alter materially the appearance, size or method of operation.

Recent Patents

Miner's Tool; 1,504,808. William N. Brown, Tilden, Ill. Aug. 12, 1924. Filed Jan. 11, 1923; serial No. 612,120.

Coal-Distilling Apparatus; 1,505,057. W. F. Nagel, Ensley, Ala. Aug. 12, 1924. Filed April 19, 1922; serial No. 555,555.

Smothering Shothole Fires; 1,504,824. Hermann Kruskopf, Dortmund, Germany. Aug. 12, 1924. Filed April 30, 1921; serial No. 465,765.

Apparatus for Removing Scale from Boilers; 1,505,084. Dale L. Breed, Ticonderoga, N. Y. Aug. 19, 1924. Filed Feb. 24, 1922; serial No. 538,970.

Loading Machine; 1,505,476. Jacob M. London, Brookville, Pa., assignor of one-half to George M. Crawford, Pittsburgh, Pa. Aug. 19, 1924. Filed July 28, 1919; serial No. 313,818. Renewed March 20, 1924.

Miner's Carbide Lamp; 1,505,617. Archie Atkins, Glen Ferris, W. Va. Aug. 19, 1924. Filed Nov. 1, 1922; serial No. 598,449.

Metal Mine Tie; 1,505,807. Justus J. Ross, Huntington, W. Va. Aug. 19, 1924. Filed March 19, 1924; serial No. 700,352.

Cutting Machine; 1,506,195. Hess P. Morgan, Lisbon, Ohio. Aug. 26, 1924. Filed Jan. 31, 1923; serial No. 616,039.

Attachment for Miners' Cap; 1,506,608. Frank Bayer, Majestic, Ky. Aug. 26, 1924. Filed Dec. 31, 1923; serial No. 683,772.

Charging Station for Storage Battery Locomotives; 1,506,848. Raymond Mancha, St. Louis, Mo., assignor to Mancha Storage Battery Co., St. Louis, Mo. Sept. 2, 1924. Filed Sept. 12, 1923; serial No. 662,211.

Mining Machine; 1,507,421. Richard Peale, St. Benedict, Pa., assignor to Rembrandt Peale, St. Benedict, Pa. Sept. 2, 1924. Filed March 24, 1921; serial No. 454,986.

Spiral Separator; 1,507,890. Frank Pardee, Jr., Hazleton, Pa., assignor to Anthracite Separator Co., Hazleton, Pa. Sept. 9, 1924. Filed July 28, 1923; serial No. 654,308.

Clamshell Bucket; 1,508,037. Wm. M. Venable, Pittsburgh, Pa., assignor to Blaw-Knox Co., Pittsburgh, Pa. Sept. 9, 1924. Filed Dec. 4, 1923; serial No. 678,374.

Apparatus for Loading Coal; 1,508,115. Frank E. Mueller, Chicago, Ill., assignor to Roberts & Schaefer Co., Chicago, Ill. Sept. 9, 1924. Filed Aug. 7, 1922; serial No. 580,951.

Mine Car; 1,508,123. Erskine Ramsay, Birmingham, Ala. Sept. 9, 1924. Filed Oct. 21, 1921; serial No. 509,436.

Coal or Other Mineral Washing Apparatus; 1,508,176. Antoine France, Liege, Belgium. Sept. 9, 1924. Filed Jan. 2, 1920; serial No. 349,119.

Method for Forming Drill Bits; 1,508,268. James J. Brossolt, Salt Lake City, Utah. Sept. 9, 1924. Filed April 2, 1923; serial No. 629,530.

Mining and Loading Machine; 1,508,633. Walter J. Wilson, Sewickley, Pa. Sept. 16, 1924. Filed Oct. 9, 1917; serial No. 195,560.

Air-Lift Pump; 1,508,667. John Oliphant, Chicago, Ill., assignor to Sullivan Machinery Co., Chicago, Ill. Sept. 16, 1924. Filed July 29, 1919; serial No. 313,997. Renewed Feb. 11, 1924.

Trade Literature

100 and 1 Ways to Save Money with Portable Air Power. Ingersoll-Rand Co., New York City. Pp. 72, 8x11 in.; illustrated. Complete and up-to-date description of portable air compressors and the air tools and labor-aiding methods made possible by them.

Robertson Glazing Construction. The Robertson Co., Pittsburgh, Pa. Catalog 74. Pp. 36; 8x11 in.; illustrated. Distinguishing characteristics, various forms and four outstanding advantages are described, including information on asbestos-protected metal.

Modern Transportation for the Coal Industry. General Motors Truck Co., Pontiac, Mich. Pp. 31; 7x10 1/2 in.; illustrated. Includes data representing a year's investigation applying to local transportation problems of all divisions of the coal industry, including references and recommendations on equipment and methods.

Turning Slush Into Profit. The Dorr Co., New York City, N. Y. Pp. 16; 7x10 1/2 in.; illustrated. The recovery of fine coal and waste water at coal mines are described.

Dorrco Diaphragm Pumps. The Dorr Co., New York City, N. Y. Bulletin 13. Pp. 20; 7x10 1/2 in.; illustrated. Uses and construction of both suction and pressure pumps are described; tables of capacities, lists of parts and instructions for installing and operating each type are included.

Crouse-Hinds Co., Syracuse, N. Y., has issued bulletin No. 2,055, describing "Ark-tite" plugs and receptacles, and bulletin No. 2,061, describing conduits with removable side plates. The former is a four-page folder and the latter measures 3 1/2 x 6 in.

The Condensed Catalog of Mechanical Stokers, compiled by the Stoker Manufacturers' Association, Detroit, Mich. Pp. 32; 8 1/2 x 11 in.; illustrated. This book is unique in that it is a catalog of the various competitive manufacturers of mechanical stokers.

Agathon Alloy Steels. The Central Steel Co., Massillon, Ohio. Pp. 48; 4 1/2 x 7 in.; illustrated. Charts showing strength of this steel and tables of weight also are included.

Floor Operated Electric Hoists. Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. Bulletin 71. Pp. 59; 9 x 11 in.; illustrated. Contains descriptive information on mechanical details, adaptability and application of these hoists and includes dimensions, prices and other data useful to the engineer.

N. S. Greensfelder, of the Hercules Powder Co., Wilmington, Del., has recently written a booklet on **Safety in the Use of Explosives**, a copy of which may be obtained by writing to the above address.

Publications Received

Annual Report of W. M. Stewart, Director of the Census, for the fiscal year ended June 30, 1924. Pp. 34; 6x9 in.

Annual Report of Herbert Hoover, Secretary of Commerce, for fiscal year ended June 30, 1924. Pp. 202; 6x9 in.; tables. In four parts, as follows: Economic Progress, Elimination of National Waste, Legislative Recommendations and Condensed Bureau Reports.

Power Studies in Illinois Coal Mining, by Arthur J. Hoskin and Thomas Fraser. Prepared under a co-operative agreement between the Engineering Experiment Station of the University of Illinois, the Illinois State Geological Survey and the U. S. Bureau of Mines. Bulletin No. 144. Pp. 82; 6x9 in.; tables and illustrations.

Industrial Coal Purchase, Delivery and Storage. Report of the American Engineering Council. Ronald Press Co., 20 Vesey St., New York City. Pp. 419; 6x9 in.; illustrated. Price, \$5.

Annual Report of the New York State Tax Commission, 1923. Pp. 535; 6x9 in.; tables.

Estimation of Underground Oil Reserves by Oil-Well Production Curves, by Willard W. Cutler, Jr., Bureau of Mines, Washington, D. C. Bulletin 228. Pp. 114; 6x9 in.; tables and illustrations.